BIOCHEMISTRY
AND
PHYSIOLOGICAL THERAPEUTICS

BY ALEXANDER CHITTICK, M. D.

BIOCHEMISTRY

and

Physiological Therapeutics

REVISED EDITION

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Preface

Someone has wisely said: "In the midst of life we are in death."

Death is a universal law. To all life nature has set a limit from which there is no escape. The life of the human organism is an aggregate life. The life of the whole is the life of the individual cells, some of which are dying continually.

The death of some cells, like those of the hair and nails, does not affect the vitality of the whole, yet the death of a few cells like red blood corpuscles and cells of the heart and nervous centers would cause the death of the individual.

Muscle cells retain life long after the rest of the body is dead; this is because they receive their nutrition from the fluid in the intercellular spaces. Lymph continues to flow for some time after the animal is dead.

The chief cause of the malignancy of the infectious diseases is that their toxins destroy cell life in the aggregate.

The genesis of all life is within the cell. Man is a multicellular animal, differing from the unicellular amœba only in the number of cells. Disease and death, being the direct antagonists of life and health, must also originate in the cell.

Every cell is derived from another and shares the harmonies and inherent proclivities of the parent cell.

The true sources of disease and health are found in the cell, and all rational treatment should be directed to the cell, and the elements supplied to its exhausted protoplasm to give it life and activity.

The constituents of the body are the perfect principals; oxygen, hydrogen, carbon, lime, iron, potash, soda, silica, magnesia, etc. These tissue salts and gases carry on the chemistry of life. Physiological chemistry goes on within the cell and intercellularly and uses as its reagents the cell salts. Therefore a deficiency in any of the cell salts means a break in the molecular chain that carries on the chemistry of life. Disease, then, is a form of starvation and rational therapeutics should be directed to supplying deficiencies.

The living cell is a complex solution of the tissue salts, and chemical changes within the cell are reactions in solution.

In this work I have endeavored to outline the principles involved in cosmic life. I feel that it will prove to be a valuable aid to all progressive physicians.

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Introduction

He that hath light within his own pure breast may sit in darkness and enjoy the bright day. Six thousand years ago, we are told, the supreme ruler of the universe looked down upon a world enshrouded in the darkness of vice and ignorance. Upon the crestfallen brow of the man whom he had created in his own image was the look of fear and dread. Yea, all was chaos and darkness and buffeted by conflicting emotions and swayed by false isms and doctrines, was sore afraid. The Maker was displeased with His handiwork. Then from out the heavens, with a peal of thunder and a flash of lightning, came the supreme command, "LET THERE BE LIGHT," and THERE WAS LIGHT.

Adam, the first GOD MAN, shook off his slumbering lethargy and peered forth from the door of his cave and saw in a new light the promise of his Maker written in the heavens, and he was not afraid. He led his Eve forth by the hand down into the peaceful valley of promise, and forthwith began to disseminate the eternal principles of law and truth.

Oh, thou follower of the healing art, how long will you remain in the wilderness of pills and plasters surrounded by false isms and dogmas amid the howling of the deadly microbes peering forth at intervals from the door of thy

cave for a glimpse of truth on which to pin your faith. Already you may see the beacon light of biochemistry which will guide your bark across this tempestuous sea to a haven of rest, which is built on the solid rock of eternal truth.

The dawn of a New Era is at hand. Already the sun of biochemistry gently sheds its rays of truth over the troubled sea of therapeutics, unchangeable truth which will eventually supersede and triumph over all theories in the practice of medicine.

Life is vibration. This vibration takes place between cells, between cellular constituents, between organs and between organisms. Vibration depends upon electric currents which pass between positives and negatives. There can be no vibration without these two essential elements; they are found everywhere in nature and are the basis of all chemical, mechanical and physiological changes in the universe.

Animal life has its beginning in the attraction of the negative ovum for the positive spermatozoa. All chemical changes depend upon the positive and negative atoms in the substances, brought together for chemical interchange, the positive of one substance leaving its affinity and going over to the negative of another substance for which it has greater affinity, thus driving the other out or exchanging places with same.

The sun is the great positive body of our solar system. All the other planets are negatives and depend upon the force of gravita-

tion, positive currents from the sun, to hold them in their orbits as, in unerring cycles, they roll around the sun. Solar light is caused by vibrations in ether, a subtle medium surrounding all molecules of matter and filling space.

The sun itself may be an opaque body emanating electro-positive rays. The latest researches in chemistry would indicate that atoms are composed of ions, that all ions are the same, there being only one elementary substance, and the different elements are produced by the different grouping of the ions in the atoms; could we discover the one elementary substance we could produce synthetically all the elements in nature.

We read in current literature that scientists are growing plants under the influence of magnetic currents and are experimenting on innocent school children with electric currents, and find that it enhances the growth of the plants and stimulates the brain cells to greater activity; but in so doing they are simply treating, or practicing empirically by stimulating with electric currents the negative elements on the plant or animal cells which effect could be brought about naturally by increasing the positive elements in these same cells.

Agricultural chemists are doing great work by adding to the exhausted soil the positive cell salts which the plant needs for its growth.

The cell salts, lime, iron, potash, soda, silica and magnesia, are the positive elements in the animal economy. A deficiency in any of these

cell salts means a lack of vibration and a break in the molecular chain that carries on the chemistry of life. The genesis of all life is within the cell; disease and death, being the antagonist of health and life, also has its origin in the cell. Cell life and activity depends upon the tissue salts which are the positive elements of the cells. Disease is a form of starvation, due to a deficiency in some of the cell salts, therefore all rational treatment should be directed to the cell and to supplying the deficient elements to its exhausted protoplasm to give it life and activity.

The negative elements, albumin and carbohydrates, serve as the physical basis of the tissues, while the cell salts determine the kind of a cell to be built up. Nerve cells need magnesia, while the viscidity of the blood depends upon potassium, as this salt is a worker in fibrine. A lack of this salt will cause the fibrine to be thrown out of the vital circulation, causing colds and catarrhs.

Fibrine is produced in the blood chiefly by albumin and potassium. Its solubility and diffusion depends upon potassium. Calcium affects the diffusibility of albumin and also helps to hold it in solution. It forms the **plasmahaut** of the cells and helps to hold all the other salts in solution. Without this salt, in proper proportions, the cells cannot maintain their integrity, the viscidity of the blood is reduced, and the colloidal membranes are weakened,—thus allowing the albumin to

be thrown off through the kidneys as in Bright's disease.

It boils out through the skin and mucous membranes causing eczemas and catarrhs.

The most essential element in organic chemistry is oxygen; without oxygen the tissues soon die, cells break down and discharge their cell salts, and acids accumulate, which in turn become neutralized by the cell salts causing a deficiency in same.

Iron is the necessary element to hold oxygen in solution in the blood. Fever may be caused by a lack of this element as the blood working with a deficient supply of iron must circulate faster to do the same work. For this reason iron is a good febrifuge.

Disease is truly a form of starvation, a deficiency in some of the positive elements upon which all physiological activity depends. The negative elements are found in abundance in nature. They are the fuel of the body but cannot be utilized by the organism when there is a deficiency in the cell salts.

Thus, a study of biochemistry shows us the true cause of disease and enables us to make of the healing art an exact science by supplying deficiencies.

Intravenous medication makes it possible to apply directly to each kind of tissue the peculiar salt according to its requirement in disease.

The true materia medica is to supply deficiencies in human blood. Upon this solid rock

the temple of scientific healing may be built. And though the microbes howl about the door and the waves of skepticism and distrust dash against the rock, the temple will stand for ages, as its foundation is secure.

Cellular Physiology

In order to understand biochemistry from a standpoint of physiological therapeutics we must make a brief study of the physiology of the cell.

When life made its first appearance on the earth's surface, water was everywhere present and as a consequence must play an important role in the formation of the self-polymerising substance from which protoplasm was formed. The solvent power of water, its high specific heat, its fluid character, and its ionizing power over salts, make it determine many of the qualities and play an important part in all the chemical and physical changes which take place in protoplasmic activity which we term life.

Protoplasmic fluid consists of a suspension in water of various compounds of complex structure.

Chemical changes within the cell are reactions in solution and must therefore be derivable from, and measured in, terms of osmotic energy when taking place in the interior of the cell, and in surface energy when occurring at the dividing surface between the cell and its environment; all manifestations of life are due to these two modes of energy.

No substance can enter a living organism except in solution. All metabolistic changes must occur between substances in solution. Oxidation goes on in the body in a watery menstruum by synthetic gradations producing CO^2 and H^2O, the same as in combustion outside of the body.

Cellular energy is due to the total osmotic pressure and chemical energy of the dissolved cell salts produced by their complete oxidation. This being the case, the cell salts become a matter of great importance.

It is a well-known fact that to preserve isolated cells, it is necessary to keep them in a normal fluid, that is, a fluid having a certain molecular concentration.

Red blood cells when placed in a solution of sodium chloride having a greater concentration than blood plasma will shrink, whereas, if placed in a solution of distilled water, they will swell up and burst, discharging their hæmoglobin into the surrounding fluid. The actual energy of any cell is determined by its molecular concentration. Its potential energy depends more upon the nature, than upon the amount, of the substances in solution.

Diversity of function in cells implies diversity of structure and composition, and every active cell is constantly taking up and giving out substances to the surrounding medium. The living cell, though in constant osmotic interchange of water and dissolved substances with its surroundings, often possesses a composition differing from that of the latter, which

is determined largely by the hereditary disposition of the cell itself. Some cells when viewed with the microscope, look like a translucent mass of protoplasm, others seem to have a nucleus, and contractile vaculous openings such as a mouth, cilia, and alveoli. In every case the protoplasmic mass has a well defined border or cell skin separating it from the surrounding medium. When a cell such as the ovum takes up food, its natural tendency is to deposit it in the alveoli so that the whole structure acquires an alveolar arrangement, which is visible in fresh living protoplasm. The active streaming movements, which may occur in opposite directions, show that the cell is composed of a fluid. The shape and resistance to deformity of the cell is due to the surface tension of the cell. By multiplying surfaces as we do in making an emulsion we may rob a fluid of most of the properties which are characteristic of fluids.

Since all living cells and their parts are made up of colloids and cell salts, all physical and chemical changes must take place in a colloidal medium. We must have a knowledge of the behavior of this kind of material.

A colloid is a substance having characteristics of bodies such as gum, albumin, dextrin, and gelatin; they occur either in solution or pseudo-solution according to the nature of the solvent, also in solid form. Colloids are practically infusible in health through animal membranes. This property was utilized by

Graham in separating crystalloids from colloids by dialysis.

The proximate constituents of living tissues are usually termed proteins, fats, and carbohydrates, and cell salts. The proteins are very complex in structure, and nearly always occur in combination with nuclein, lecithin, phosphorized fats, carbohydrates, and derivatives containing nitrogen. Many properties of colloids suggest that their characteristics depend upon the large size of their molecules. The molecular diameter of a substance bears a definite ratio to its molecular weight. The molecular weight of the protein hæmoglobin is in the neighborhood of 16,000. Osmotic pressure and molecular weight of substances have a distinct ratio. The osmotic pressure of the proteins, or serum, points to a molecular weight of 30,000, and nuclein, lecithin, fat, carbohydrates, and protein which compose the cytoplasm have a molecular weight of 100,000. A molecule whose molecular weight to 100,000 might be rendered visible by some method of illumination on such as the ultra-microscope of Zigmondy. Molecules of this size would possess the properties of matter in mass. They would have a surface of measurable extent and their relation to the solvent surrounding them would be determined by the laws of absorption rather than by the laws of molecular attraction. The colloids which make up the animal cell have properties which would suggest mechanical suspension in some cases,

and in others partake of the nature of chemical reactions.

In a solution the molecules are equally diffused throughout the molecules of the solvent and energy is required to separate other than filtration and gravitation. The force required is the osmotic pressure of the solution, consequently we must regard osmotic pressure as a distinguishing feature of a true solution.

The colloids in blood serum containing about seven per cent. proteins have an osmotic pressure of 25 mm., corresponding to a molecular weight of about 30,000. Colloidal solutions, such as starch and glycogen, display no osmotic pressure.

All colloids have a property called imbibition, which in many cases cannot be distinguished from the process of solution. This imbibition pressure increases with the concentration of the colloids.

The colloid can be precipitated in association with a certain amount of the solvent, or the whole mass turned into a gelatin by heat, mechanical agitation, or the addition of electrolytes.

Colloidal particles in this precipitation in many cases carry electric charges like the ions in a solution of sodium chloride.

The mutual repulsion of the particles thus brought about helps to keep them in suspension. By the passage of a current, or the addition of an oppositely charged colloid, this mutual repulsion is done away with, and the particles fall to the bottom as a precipitate.

The essence of this change that has taken place consists in the conversion of a colloid with unlimited powers for swelling into one whose powers for imbibition are limited, as is the case with animal material like white fibrous connective tissue.

Any fluid at its surface possesses different qualities to that of its interior. Any dissolved substance which diminished the surface tension of the solvent tends to accumulate at the surface. This is how cell life begins as seen in the ovum.

In a hydrosol, such as albumin, every fluid mass of colloid in the body will tend the surface to become coated with gelatin or pellicle which will resist deformation and extension, and the properties of which will determine the access of fluids or solids to the hydrosol within.

The formation of such gelatin or pellicles at the periphery of every mass of protoplasm determines the production of a surface tension, which will account for the rigidity of different forms of living tissue, and determines the permeability of different cells to the entrance or passage of the cell salts and other substances between cells and between the intercellular spaces, the blood vessels, lymphatics, intestinal villa, and controls the excretion and secretion of the various glands of the body.

A study of the chemistry of the cell gives us an idea of its behavior according to the nature of its environment, since the relation of the cell to its environment, as well as the

interrelation of its parts among themselves, must depend upon the qualities of the pellicles bounding the surface of separation.

This bounding membrane is termed the **Plasmahaut,** or cellskin. It is a true colloidal membrane, and all substances passing through same must be governed by the laws laid down in physics for colloidal membranes.

The permeability of such membranes to any given substance is conditioned upon the solubility of the substances in the membrane, or of the membrane in the substance.

A colloidal membrane composed of protein, or gelatin, or allied substances, is easily permeable by water, or any substance soluble in water, such as salts and sugar.

The plasmahaut plays an important role in maintaining the privacy of cell life, since it is by means of this layer that the cell enters into relation with its environment.

The cell wall differs considerably in its chemical composition from the protoplasm out of which it has been formed. In plants it consists of cellulose, a carbohydrate substance ($C_6H_{10}O_5$). In other cases it is composed of calcium carbonate or other lime salts, from silica or chitin, and may be perforated to allow the passage of protoplasm between the adjacent cells.

A cell which lives in a fluid environment must take the greater part of its food from this medium in soluble form.

The superficial layer of protoplasmic cells is of lipoid character, and is composed chiefly of

cholesterin and lecithin, and only dyes that are soluble in cholesterin and lecithin are used for intravitum staining.

Consequently, substances like toxins, acids, bile salts, and ether, which dissolve lecithin and cholesterin, cause a destruction of the red cells of the blood by dissolving their superficial layer.

The inorganic constituents of blood serum play an important part in controlling the heart beat. The salts of potassium, calcium, and sodium, have a specific action in regulating cardiac activity. We may inject a pint of sodium chloride solution into the veins with little ill effects, when a few cubic centimeters of potassium chloride may cause death from heart failure. At the same time, we may give an intravenous injection of sodium, potassium, magnesium, calcium and ferrum, if it be a harmonious solution of these salts in the approximate proportions in which they exist in normal blood, with no ill-effects because these cell salts are the positive elements of the body; they are acid binding and eliminating; they enter into every cell and tissue of the organism. These tissue salts carry on the chemistry of life. Physiological chemistry goes on within the cell and intercellularly and uses as its reagents the cell salts. When any of these salts are missing, the molecular chain which carries on the chemistry of life is broken.

In order to understand the importance of these cell salts, we must go back to the pre-Cambrian period of the world's history when

organized life first made its appearance on the globe.

The first animal life consisted of a speck of protoplasm, a unicellular animal moving about by an amœboid motion having a colon or hole through the cell to admit sea water from which it subsisted by absorption mainly of the cell salts.

The approximate proportions in which the tissue salts exist in the animal economy today are about the same as the sea waters of the pre-Cambrian time, but evaporation and intake of water carrying salts from the rivers have caused considerable condensation of the sea waters since that time. Since protoplasm was formed at that time by some polymerising organic compound in sea water, it stands to reason that it should contain saline constituents corresponding in proportion and amount to those of the sea water at that pre-Cambrian time, but evaporation and intake of water carrying salts from the rivers have caused considerable condensation of the sea waters since that time.

The process of segregation and reproduction by self division in cell life would indicate that the saline constituents of protoplasm have not changed materially since life first made its appearance on the earth. While sea water has changed from the precipitation of calciums, chalk and potassium.

A very interesting experiment to prove the value of the cell salts to living protoplasm or

animal life is to take, for instance, such sea animals as the star fish, gamarrus or sea-slugs and put them in distilled water; respiration and other signs of life will cease in a few moments; they again revive when placed in sea water within a few minutes. In solutions of the proper proportions of NaCl and CaCl, the animals lives as long as two days and when $MgCl_2$ was added they lived as long as in sea water.

I have also taken guinea pigs and rabbits and fed them on foods from which the tissue salts had been removed. The animals did not lose weight but died almost as soon as they would have from starvation.

From these experiments we must conclude that the cell salts are of vital importance to the cell and to all animal life of which the cell is the basis, as the only difference between the unicellular amœba and man is the number of cells.

The colon was the first step in evolution as it became necessary in the scale of animal life; that is, multicellular animals with powers of rapid motion and a possible life outside of sea water had to have a body gravity to hold a fluid for the storage and supply base for the cells, the same as they were in the habit of taking from the waters of the sea.

The evolution of the alimentary canal was followed by a circulatory apparatus and other organs designed to maintain the balance of the circulating medium under varying internal

conditions. A respiratory system making it possible to live outside of the water and absorb oxygen from the air. With this complex structure the animal began its migrations from the sea and to subsist on vegetable matter. Thus the vegetable kingdom bridges the way from the inorganic to the organic. From the sea to land. It transmutes the same organic salts found in the sea from which the protozoa lives by absorption in sea water, with the aid of sunlight, carbon and oxygen from the soil, into a form in which the wandering animal of the sea can incorporate them into his organism by the means of a colon.

Having established the characteristics of colloidal membranes and taking into consideration that all the secretions and excretions of the body either to supply the cells with nutrition or carry off the waste products of metabolism will have to be governed by the physical laws which apply to colloidal membranes in general, we will go a step farther.

In the higher animals the cells of their bodies are bathed by an internal medium by which they are nourished and into which they discharge their waste products.

The average consistency of this internal medium must be kept at a normal balance so that the cells may discharge their functions properly and that chemical products may be produced by one set of cells that modify the function of other cells in remote parts of the body.

The process of excretion in animals is associated with a loss of water to the organism.

The gaseous metabolites such as CO_2 are carried off through the lungs. Most of the solids such as urea, uric acid, etc., are thrown off in a watery solution by way of the kidneys and skin.

The intake of water and salts required by the organism is governed by the central nervous system as great loss of fluids by sweating or by diarrhœa and hemorrhages is followed by thirst, but on the other hand the state of depletion of the organism has very little to do with the absorption of water and weak saline fluids from the alimentary canal.

The watery contents of the body in health will remain constant regardless of the amount of water taken daily, as the kidneys regulate the water supply of the organism apart from that determined by the appetite.

The chief absorption of water occurs in the small intestine. The passage of fluids from the gut is directly into the blood vessels between the intervening layer of columnar epithelial cells, consequently is governed to a certain extent by the law of osmosis except in the case of a solution of NaCl, as this salt passes directly through the membrane although it may be slightly hypertonic; however, in the case of colloidal membranes, if we place a solution on one side of the membrane that is hypertonic and on the other side a solution of the same salt that is hypotonic, the salts will

pass from one side of the membrane to the other until they become neutral. This is especially the case with sodium chloride, as this salt passes easily through the mucous membrane and the fluid is rapidly absorbed. If on the other hand salts such as sodium sulphate, which passes with difficulty through the cell lining, are present in solution, the osmotic pressure due to the dissolved salts continues as a force opposing the absorptive activity of the cells, and water will be absorbed until the molecular concentration of the salt solution over the blood plasma produces on osmotic pressure or attraction for water which counter balances the absorbing force of the intestinal epithelium.

The internal media of the body is composed of three distinct fluids namely, the blood, lymph and tissue fluid.

The blood circulates in a system of closed tubes separated from the tissues by a layer of endothelium.

The lymph is contained in a system of closed endothelial tubes which empty into the subclavian vein. The tissue fluid fills all the spaces of the body coming in contact with the tissue cells furnishing them with nutrition and receiving their waste products.

The intercellular spaces and lymphatics have a very important function to perform in the way of furnishing nutrition to the cells, which would be a physical impossibility to supply with a circulation like the blood vessels. They

also act as reservoirs for the vascular circulation and will supply immediately any deficiency in the circulation of the blood. As a proof of this, the blood test where an animal bleeds to death: The first blood will differ from the latter portions, as it will contain more corpuscles and a larger content of protein. This is what takes place in any hemorrhage, and shows the manner in which the organism maintains the balance of circulating fluid in an emergency, in order to keep the blood density at a standard of 1060 which is very necessary to the commonwealth of the body.

In health there is a gradual passage of the plasma rich in protein into the intercellular spaces where it bathes all the cells with which it comes in contact, receiving their metabolites. Portions of the intracellular fluid pass on into the lymphatics, where it continues the process of nutrition in the superficial tissues of the body as it passes on to be emptied again into the blood stream in the large veins at the root of the neck. It then discharges its waste

	Iron	Potassium Sulphate	Potassium Phosphate	Potassium Chloride	Sodium Phosphate	Soda	Calcium Phosphate	Magnesium Phosphate	Phosphoric Acid	Sodium Chloride
Blood Cells	0.998	0.132	2.343	3.079	0.634	0.334	0.094	0.060	----	
Plasma ---	----	0.281	----	0.359	0.271	1.532	0.298	0.218	----	5.545
Milk ------	0.004	0.78	trace ine	s of fl and	our- silica	0.23	0.33	0.06	0.7	Chloride

products into the circulation and receives a fresh supply of oxygen to begin its cycle anew.

The foregoing table shows the approximate constituents of blood cells, intercellular fluid and cows milk per thousand grammes.

The production of the tissue fluid is limited to the region of the capillaries and small veins.

The endothelial wall of the capillaries is composed of a layer of flat cells which abound on the adjacent cells, thus leaving a slender crack between the cells. These cells are held together by a cement substance. This structure would suggest a leakage between the cells of lymph and plasma. This cement substance is composed principally of calcium. When there is a deficiency of these salts in the blood the leakage becomes abnormal, admitting red blood corpuscles which pass from the blood vessels along with colloids.

This capillary wall allows the passage of practically all crystalloids, though the nature of the salt governs the ease of passage through the membrane. Sodium chloride passes with greater ease and rapidity than sodium sulphate.

Any sudden formation of soluble substances outside of the vessels will raise the molecular concentration of the tissue fluid and draw water from the blood vessels into the tissue spaces. On the other hand, an intravenous injection of dextrose or sodium sulphate will draw water from the tissue spaces, and these in turn will draw water from the cells of the tissues; this will bring about a condition of hydraemic plethora, and the irritation of the

sodium sulphate on the kidneys will cause the elimination of the excess of fluid by these organs. This is a good treatment in all forms of dropsy. The injection of a small quantity of a concentrated solution of sodium chloride will have the same effect, as it will increase the density of the blood drawing water from the tissues of the cells.

There is no need of delving farther and taking up more space with the intricate structures of the human body.

The constituents of the human body are the perfect principals: oxygen, hydrogen, carbon, lime, iron, potash, soda, silica, magnesia, etc. The tissue salts, lime, iron, soda, magnesia, potash, and silica, are the positive principals of the organism, and every change in the organism associated with vital activity depends upon these salts.

I have shown in the first part of this chapter that the first forms of animal life existed in sea water, and lived by absorption of these salts from the surrounding medium.

If the complex structures of all the forms of animal life that appear upon the globe today can be developed by a process of evolution from these salts as a basis mingling with the gases and fluids surrounding the earth, it stands to reason that every disease is due to a lack of some of these salts in the organism, and that every disease that is curable may be cured by supplying the deficiency.

There is an abundance of the other constituents of the body outside of the five principal

cell salts, magnesium, ferrum, calcium, potassium, and sodium. With these supplied to the cells in the proper proportions, they are enabled to take from water, air, and food, the other substances that constitute the body. Furthermore, the best results are obtained from supplying them in the form in which they are found in nature. Nature does not furnish the roots of the plant with starch, sugar, and chlorophyl, to produce these substances in the plant, but, on the contrary, she supplies a few molecules of the phosphates, iron, sunlight, water and air, and we have the complete plant in all its beauty and complex structure, built up from the soil by a synthetic process. Yet Solomon in all his glory was not arrayed like one of these.

The wise physician imitates the laws of nature and studies her methods. The physician who treats causes will relieve effects. Those who treat effects or symptoms, do it on account of either indolence or ignorance, both of which are inexcusable and criminal in twentieth century civilization. The physician who treats effects reminds me of the little boy who was feeding his pet cat milk and delicacies to relieve a squall that was caused by the cat having its tail caught in the door. Perhaps if he had given the cat a hypodermic of morphine, or Oslerized it, he would have succeeded in relieving the squall at least. Pepsin for indigestion; coaltar products for neuralgias; quinine for chills; calomel for sluggish liver, and I might go on and enumerate hundreds of other empir-

ical lines of treatment that are just as silly as the boy's treatment of the cat.

Wherever there is a nerve dyscrasia, there is a lack of ferrum, magnesium, potassium, or sodium. The muscles have the same cell salts, with the addition of potassium chloride.

The master cell salt of connective tissue is silica, and of the elastic tissue, calcium. The basic salts of bone cells are calcium and magnesium phosphates. Calcium phosphate is found in the cell-skin of all the cells of the body, and a lack of this salt will cause a breaking down of the cell walls, like what is found in dropsies, catarrhs, Bright's disease, etc. Considerable experimenting is being done with the colloidal metals, such as colloidal copper, in carcinoma. This is along the right lines, as disease usually begins in the interspaces from underoxidation, and the best results will be obtained from substances that will permeate colloidal membranes. However, I get good results with the tissue salts, as they promote oxidation and bring about a normal blood density with from three to six injections in ten days' time.

Calcium is being used with good results in cancer, and my Hæmatone has shown marked results in cancer cases.

In all forms of diseases it is the chemical effect of the cell salts in the blood that helps to bring about normal metabolism and restore the patient to health.

Pathology

Life is vibration. The animal and the vegetable kingdoms are truly transformers of energy. The positive elements in all forms of protoplasmic life are the tissue salts, sodium potassium, magnesium, ferrum, and calcium.

We have shown in a previous chapter how a self-polymerising substance, with the aid of salts, produced the first forms of vital activity.

Life, electricity, and chemistry, are correlated. Electricity can be produced chemically, and chemical changes can be brought about by electric currents. Life is produced by electric energy, and the nervous system is a complex system of electric wires and relay stations.

Nature, without the aid of dope or doctors, has elaborated on the first specks of living protoplasm, and by a system of evolution and and multiplication of cells produced the man.

If we would live according to the laws of nature, subsist on natural substances in a natural manner, we would have no further need for doctors.

The drug habit comes from overeating and underbreathing. Men make of their stomachs human garbage cans, stuff their hides like pelicans, breath like hibernating animals, go to bed at midnight and toss about with a night-

mare, awake in the morning with sour stomach and indigestion. He takes a couple of compound cathartic pills, and repeats the same process the next day. Soon he must consult a specialist, who tells him he has a cancer of the stomach, tapeworm, cirrhosis of the liver, and Bright's disease. He has his stomach, appendix, and kidney removed. The operation is successful, but the patient dies.

It is difficult to improve on nature. The first law of health is peace of mind. Unhappiness is an irritant. It effects the circulation by causing a construction of the arterioles, thus interfering with elimination and oxidation, causing a breaking down of the tissues and disease.

Keep happy and contented; in the moments of good will the mind is calm, the circulation is free, the pores are open, and secretions natural. Let an angry passion rise, or a spasm of hate, jealousy, or fear, sweep across the dome of thought, and there is a tumultuous pumping of the heart, followed by shock with vascular constriction. The secretions are stopped and the waste products of metabolism retained in the system, causing disease in the form of congestion and fever—nature's method of restoring equilibrium.

If the secretions of the body are completely checked and retained in the system for fifteen minutes it will cause death.

A cancer may be caused by hate, anger, or fear, in the same manner. Very often during shock of constricted circulation, emboli are

formed in end arteries, thus causing a stoppage in the circulation. Nature tries to relieve the condition by sending more blood to the part. This increased nutrition kept up for any length of time causes a growth or multiplication of prematurely developed cells at this point. This hyperplasia of runt cells in connective tissue is characteristic of cancer. The secretions of cancer are acid. They must be neutralized, the patient is underoxidized. The patches of embryonic cells, which also cause cancer when fertilized with the cell salts, become normal and disappear.

The difference in the tissues and cells, that are found in parts of the body, is due to the kind of inorganic salts which make up these cells.

The chief of the tissue salts is ferrum phosphate. Its function is to maintain the oxygen tension of the organism. I have explained in my chapter on oxidation how very important this is. So whenever you have inflammation fever, rapid heart action and respiration, sclerosis of the tissues or blood vessels, obesity or loss of weight from improper assimilation or oxidation, catarrhal conditions with accumulation of uric acid in the system, coughs, colds or congestions, the indicated remedy is ferrum phosphate.

CALCIUM.—Calcium is the chief salt in the cell skin or plasmahaut, and upon this substance the cell structure depends largely, as well as the bony structure of the animal. In the first sea animals a skeleton was com-

posed of deposits of lime around the cells. The elasticity of the cell skin as well as the elasticity of the muscular and connective tissues depends upon lime salt.

The interspaces of the endothelial cells are minous serum and fibrin by the tissues and due to a lack of this salt that we get a breaking down of the cell walls formed by the endothelium. This cell wall forms the colloidal membranes of the body. A break in this membrane allows the exudation of albuminous serum and fibrin by the tissues and glands, thus causing dropsy, albuminuria, and catarrhal conditions in various parts of the body, according to the tissue and organs.

As this salt is acted upon by acid conditions of the system, and acid conditions are caused by deficient oxidation largely, we can see how a lack of ferrum phosphate will be followed by breaking down of the cell wall and destruction of the plasmahaut, as nature utilizes the alkaline salts to neutralize the acids when they are not eliminated by oxidation. Lime unites with albumin to form the elastic fibers of the body, as well as the cell skin of the cells.

Fifty-seven per cent of the bony framework of the body is composed of calcium phosphate. This salt increases the secretion of the glands of the stomach, tones up the elastic tissues of the body, thus preventing varicose veins and static conditions of the fluids of the body. It is indicated in rachitis, subinvolution of the uterus, boils, abscesses, and mucous patches.

It hastens the process of suppuration and, with albumin, forms a wall around the abscess. It is therefore indicated in all purulent discharges.

The phosphorus of lecithin in food is converted into glycerinophosphoric acid before assimilation. It unites with calcium to form calcium glycerine phosphate. Calcium increases the blood density and is a sovereign remedy in hæmophilia and all hæmorrhagic conditions.

POTASSIUM CHLORIDE.—This salt is a worker in fibrin and without it no fibrin can be formed. Fibrin is an albuminous substance in combination with potassium chloride, formed by the action of fibrin ferment in the presence of oxygen. The departure from the normal oxygen balance in the blood increases or diminishes the amount of fibrin as the case may be. A diminished amount of oxygen in the blood dilutes the fibrin to such a consistency that it may pass through the colloidal membranes, or interspaces between the endothelial cells, and as a consequence we find it in all inflammatory exudations of the serous and mucous membranes, as in pleurisy, catarrh, pneumonia, croup, etc.

Potassium, iron, and calcium, are necessary to hold the fibrin of the blood in solution.

In septic fevers, like pneumonia, where the toxins destroy the plasmahaut of the cells of the blood with a consequent precipitation of the cell salts, we get a defibrination of the

blood. An intravenous injection of these salts in a solution of sodium chloride has proven beneficial in pneumonia when kept up daily until the disease had run its course.

Potassium phosphate is the salt on which all nervous energy depends. After excessive nervous strain we find this salt in the urine. The co-worker in nerve structure and energy with potassium phosphate is magnesium phosphate. If these salts were used judiciously by physicians the rate of insanity could be decreased forty per cent.

The lecithin of food is converted into glycerinophosphate which unites with potassium and albumin in the presence of oxygen, creating nerve fluid and the nerve cells of the gray matter.

In all forms of insanity and nervous breakdowns, such as hysteria, chorea, delirium tremens, brain-fag, and neurasthenia, showing itself in the form of melancholy, anxiety, insomnia, and fainting, potassium and its coworker magnesium are the indicated cell salts.

When there is a lack of sulphate and phosphate of potassium in the nerve cells they are not as active to nervous sensations emanating from the various parts of the organism, and as a consequence the vital activity of the organs are deprived of the responsitory stimulus from the brain. For example, it is the irritation set up by carbon dioxide gas in the system that causes respiration. If the brain does not react to this stimulus we have a

suffocative feeling, a desire for cool air. In the same manner retention of the urine and constipation, sexual disorders, thirstlessness, and many other disorders arising from deficient oxidation, are caused.

Since the reaction of the brain to nervous stimuli depends greatly on the salts of potassium and magnesium, we must conclude that these tissue salts rank next to ferrum, as perfect oxidation depends as much on these salts as it does on iron.

The accumulation of carbon dioxide gas in the system will prevent oxidation and cause cyanosis and breaking down of the tissues if not eliminated, and it cannot be eliminated properly unless the brain responds to stimuli of the CO_2, which it cannot do when deficient in these salts.

MAGNESIUM.—The chief element in the white nerve fibers is magnesium phosphate. It is also a constituent in the blood corpuscles, muscles, bones, and teeth. It unites with albumin in the presence of oxygen and phosphorus to form nerve fluid and build up the cells of the white nerve fibers. Calcium phosphate is a co-worker with this salt in spasmodic conditions, neuralgia, sharp shooting pains, tremor, illusions of the sense of sight, twitching of the muscles, amblyopia, ozena, globus-hysterious, neuralgia of stomach and ovaries, asthma, nervous chills, and epilepsy.

All conditions due to a lack of poise between the motory and sensory nerve fibers are due to a deficiency of this salt.

The salts of ferrum, calcium, magnesium, and potassium may be given in combination as they are very closely related and dependent upon each other from a standpoint of biopathy.

THE SODIUM SALTS.—Sodium chloride ranks next to phosphate of lime in quantity in the body. It is found in all the cells and fluids of the organism.

This salt in solution in water passes easily through all the membranes and is associated with all vital activity.

The balance of the aqueous constituents of the organism is maintained by this salt. It aids elimination of waste material and is found in all the secretions and excretions. Sodium chloride is secreted by the glomeruli, but the greater portion of it is reabsorbed by the tubules, thus the normal balance of this salt is maintained in the organism.

The presence of sodium chloride is necessary to cell division. This salt is split up in the blood, the sodium uniting with carbonic acid forming sodium carbonate, and the chlorine set free unites with hydrogen in water forming dilute hydrochloric acid, which aids in the process of digestion in the stomach. Sodium, ferrum, and calcium are the chief elements in the production of new cells. We find iron in the serum of chlorotics and anæmics, the precise cause of these conditions being the precipitation and elimination of the iron from the system due to a lack of calcium and of sodium phosphates which allows the breaking down of the cell skin or plasmahaut.

Sodium chloride is the sovereign remedy in all diseases of the mucous membranes, such as catarrh, leucorrhœa, coryza, and waterbrash. Sodium phosphate is found in the blood corpuscles, in the nerve cells, and in all the tissues and fluids of the body. It neutralizes the acids, combines with carbolic acid, and carries it to the lungs where it is eliminated. It splits up lactic acid into carbonic acid and water. It splits up uric acid, forming sodium urate. It saponifies the fatty acids and stimulates glandular activity.

SODIUM PHOSPHATE.—This salt stimulates all glandular activity, especially the liver, pancreas, and kidneys. Sodium sulphate extracts water from the tissues and cells along with waste material and causes its elimination. It stimulates the epithelial cells in every part of the organism. The presence of this salt in the secretions irritates the sensory nerves of the eliminating organs and promotes the elimination from same. This salt has an osmotic pressure much greater than NaCl and cannot pass easily through colloidal membranes, hence draws water to itself into the circulation causing its elimination. In all forms of dropsy and congestions of the glandular organs this salt is the indicated remedy. Where the liver is twice its normal size it will reduce it to normal in a few days. If given internally in large doses it extracts water from the tissues and causes watery diarrhœa, therefore if given for absorption it must be given in small doses, diluted. An intravenous injection of this salt will extract

water from the intercellular space, which in turn will extract water from the cells causing its elimination by the kidneys. This is the treatment in dropsy. It is indicated in chills, dropsy, cirrhosis of the liver, leukemia, hydræmia, influenza, and all aqueous discharges from the mucous membranes, Hodgkin's disease and tubercular glands. Lactic acid coagulates albumin in the lymphatic glands, as it does in milk, if it is not split up by sodium phosphate. Therefore enlargement of the lymphatic glands means a lack of sodium phosphate. When the deposits in the glands become gaseous, magnesium phosphate is the indicated salt.

SILICA.—The only salts of this substance that are soluble in water are sodium silicate and potassium silicate. When an aqueous solution of these salts comes in contact with the hydrochloric acid of the system, a gelatinous salicic hydroxide is formed. A solution of ammonium chloride will have the same effect. This salicic hydroxide is found in the hair, nails, skin, periosteum, and neurilemma. The connective tissues lose their tenacity and ability to contract when there is a lack of this salt in them. As a result inimical substances become lodged in the tissues and form suppurating centers for abscesses, boils, pimples, and blackheads; from a lack of tonicity in the connective tissues these abscesses are latent and slow in coming to a head. This salt is indicated in blind abscesses, boils, pimples, blackheads, carbuncles, swellings, indurations, and diseases of the connective tissues in general.

Calcium phosphate is a co-worker with this salt, and while silica hastens the process of suppuration, calcium sulphate brings the process to a speedy close.

I have given the physiological action and the pathological states of the tissues due to a lack of the five principal cell salts which are the positive elements in all the chemical and physical changes in the protoplasmic life. These elements are all found in animal and vegetable economy in the inorganic form. The iron of the red blood cells is a mineral iron which can be proven by precipitating from the blood and heating, which would destroy iron in any other form but the mineral, and after which it reacts to the guiacum test.

Chlorosis and anæmia are caused by a breaking down of the cell skin and the precipitation of the iron of the blood with its elimination. This is proven by the finding of iron in the serum of the venous blood of these patients, also in the urine. What they need in combination with iron is calcium and potassium, in fact all the cell salts.

If given internally, all the cell salts should be given in minimum doses in order that they may be absorbed through the colloidal membranes, as a concentrated solution has a greater osmotic pressure than a dilute solution. In fact its pressure may be greater than the tissue fluids, and may thus prevent assimilation. However, they should be given in appreciable doses, as whatever is not used by the cells will

be deposited in the serum of the intercellular spaces for further use and any excess eliminated from the system. It is my belief that an excess of any salt given intravenously has a more direct route to the eliminating organs and will be eliminated quicker than if given intramuscularly or by way of the stomach.

As the system is most likely to be short in phosphates, and this is the form in which we find most of tissue salts in the system, I use the soluble phosphates of the cell salts. The carbonates, chlorides, and sulphates will be formed more easily by the vital processes going on in the organism.

This is pre-eminently the era of biologic and physiologic chemistry. The chemist is having his day in court. And as medicine is nowadays striking her roots deeper and broader than ever before into biology, she is naturally coming more and more into contact with, and under the jurisdictional influence of, biologic chemistry. It is inevitable, therefore, that she must, sooner or later, take cognizance, in a way that she has never yet done, of the part played by the mineral salts and their solutions in the body chemistry. It is simply unthinkable that these salts occupy the neutral, passive, trivial place that our indifference has been in the habit of ascribing to them. We are accustomed to say that water forms more than one-half of the body weight; and that is, of course, an important truth. But the actual, chemical fact is that nowhere in the body does water exist in

the form of pure, unadulterated water, but always it is a solvent of mineral salts. So that it would be more correct to say that mineral salt solutions form considerably more than one-half of the body weight.

This solution of mineral salts is practically omnipresent in the tissues, bathing every cell, entering into the composition of every cell, taking part in every process, anabolic, katabolic, and metabolic. Even though we ascribed to it no other office than that of holding in suspension the other constituents of the body, still it would be necessary to reckon with it as a momentous factor in physiology, because of the tremendous influence exercised upon metabolism by osmosis, of which the mineral salts are practically the only exponents. One has but to consider the immense importance of isotonicity as between the serum and the red corpuscles of the blood, to get an inkling of the probable range of function included in this simplest of all aspects of the mineral salts. We know, moreover, of at least one or two instances of catalyzing role played by these same salts, as, for example, the influence of the calcium salts in coagulation of the blood. And this opens up a long vista of further possibilities in the functionating of the body salts, without having thus far invoked the actual chemistry of the salts at all. Of the latter we have a few commonly known instances, such as the digestive role of sodium chloride, the cardiac office of the calcium salts, etc. But of the thousand and one chemical reactions to which

the mineral salts are doubtless parties in the obscurer processes of metabolism and body chemistry, we are as yet sadly in ignorance.

Clearly, the mineral salts are much more important elements in the constitution of the body than we have heretofore given them credit for being, and call for a great deal more assiduous study than we have hitherto devoted to them. It is well enough to smile at those who burn the human body down to its mineral ash and discard all the rest as transient and unimportant; but it is equally foolish for us to dissolve (figuratively speaking) all the mineral salts out of the body and expect to account for the phenomena of health and disease without them. It is high time that medical science turned serious attention to this question of the body salts and their significance. And, indeed, there are indications in various quarters that it is already being done. Medicine will yet justify and utilize the work of the biologic chemists in this direction.

The intravenous use of the tissue salts by me for the past twelve years has proven to my satisfaction their value as therapeutic agents. On one occasion a patient whom I had placed in the hospital for an operation for appendicitis was given an injection the day before the operation was to be performed as a general blood tonic. All symptoms cleared up and the patient recovered without the operation.

The great secret in the treatment of disease is to keep the blood neutral or slightly alkaline as most all pain arising from the accumulation

of waste products in the system is due to the acid reaction they cause. In all fevers the blood is acid in reaction. Of course by regulating the diet and cleaning out the alimentary canal you remove the cause of this acid formation, except where it is contraindicated by pathological lesions, such as appendicitis and ulceration of the bowel in general, then it is best to flush out the colon with enemas. Calcium creosote is good to use in these enemas as it is healing, antiacid, antiseptic, and astringent, and no other drug has so many virtues and so few faults as Calcium.

Materia Medica and Therapeutics

Hippocrates is acknowledged by all as the "Father of Medicine," but no doubt the Egyptians were versed in anatomy and medicine.

The Papyrus Ebers written several thousand years ago and concealed for four thousand years between the legs of a mummy has revealed the science of medicine as practiced by the Egyptians.

In this work we find a large portion of the diseases known to modern science classified, as well as a list of drugs from the animal, vegetable, and mineral kingdoms, covering pretty well the materia medica of today, prescribed for their bodily ailments.

Medical literature then was considered sacred and only accessible to the priests and their matriculates.

Moses, having the education of an Egyptian prince, was versed in medicine and no doubt studied the Papyrus Ebers.

Among the savage tribes disease was considered the work of evil spirits. Thus, in all lands and climes, certain spells, incantations, and sorceries have been used to ward off diseases, and even today we find so-called civilized men who carry a buck eye or a potato

in their pockets, or wear iron rings to ward off rheumatism and other diseases. But through the fog of time and mysticism there towers one great man, Hipprocrates. He was imbued with the idea which he received from the Priests of Esculapias of Cos, that the value of medicine laid in the assistance of nature. He held strongly to this view, and taught physicians to study nature and observe her laws, which is the basis of all rational medicine today.

With all their boasted knowledge and the setting up of false standards, the rank and file of the medical profession know very little more, from a therapeutic standpoint, than did Hippocrates, and the majority of them have not advanced their peg a hole in the cribbage board since the days of the immortal Galean.

Standards of medical colleges have been raised, and the time required to complete the medical course has been increased in most states to five years under the guise of protecting the dear people by turning out more competent doctors, while perhaps the real reason is to limit the number of doctors by keeping numbers of people out of the profession.

With all this, it seems to me that people that live in states where the medical standard is not so high keep just as well and live just as long as those who are so well protected by law, and the South Sea islanders who use the Voodoo man to scare disease out of their sick, get along just about as well as we do.

The fact of the matter is that germs only affect sick people or those whose vitality is

below the normal standard, and the people who live natural lives out in the open air have greater resisting power than civilized people who are overworked and underfed in the so-called social communities of the present day.

The poor man is underfed and overworked and the rich man is overfed and underworked as a usual thing, consequently both suffer from auto-intoxication which is the cause of all disease. Nature regulates these things so that none are exempt from her immutable laws.

The brain worker suffers as much as the laborer. A glance at the anatomical chart will show that approximately one-third of the entire circulation of the blood goes to keep up mental activity, and the waste products of cell combustion must be eliminated by the kidneys and liver, while the man who labors with his muscles forcibly eliminates more or less from the lungs and skin, taking considerable off the work from these organs. The name auto-intoxication covers a multitude of sins, such as purin waste, uric acid diathesis. During my twelve years of practice along intravenous lines, treating the blood almost exclusively for all diseases, I have learned many interesting things about the blood and its relation to physical well being. I have given more than twenty thousand intravenous treatments, and there is hardly a classified disease I have not treated with better results than I could have obtained by any other method. During the routine treatment of hundreds of patients with as many dif-

ferent diseases, introducing the needle into the blood stream and withdrawing the piston of the syringe drawing out the blood to ascertain if I was in the vein, I have noticed that in the anæmas and diseases associated with low blood pressure the blood was aqueous and lacked viscosity, while those of high pressure and plethoric conditions, the blood was very viscid and seemed to break off in chunks. This condition was also found in acidæmia and conditions associated with rheumatic diathesis. This thick viscose blood will cause occlusion of the capillaries at the venous end, preventing the return flow of blood from the poorly vascularised extremities, similar to ligation of a part. If the normal interchange of blood between the tissue cells is kept up long enough, the cell languishes and dies in its own excreta, that is, gangrene results, while partial obstruction causes ischæmia, cyanosis, erythemia, etc.

The inability of the fine capillaries of the neurons to carry this thick heavy blood is what causes neuritis, due to poor nutrition of the neurons.

Raynaud's disease is caused by the occlusion of the capillaries of the extremities with this thick voscose blood, producing stasis, faulty nutrition, and finally gangrene. It is associated with uricacidæmia, and the treatment is the same as rheumatism.

Mrs. L. suffered with articular rheumatism, also neuritis and Raynaud's disease, the finger tips being gangrenous. I gave her intra-

venously 10 c.c. doses of the tissue salts in combination with the salicylates every third day, covering a period of ten weeks, with a complete recovery. I have treated sluggish ulcers of the lower extremities, also by this method, with good results when all other treatment failed. Mrs. J. suffered with four varicose ulcers on the right limb of long standing. Surgeon advocated amputation. Treated intravenously twice per week for twelve weeks. No other treatment but elastic bandage to limb. Made a complete recovery.

Articular rheumatism is usually brought about by traumatism, when the blood is saturated with urates, the urates are brought to this point in large quantities and the lessened alkalinity which takes place causes a precipitation of the urates, which become attached to the fibrous tissues. An intravenous injection of my alkaline solution for rheumatism every twelve to twenty-four hours will prevent this.

Catarrh, another name for auto-intoxication, is due to faulty metabolism and deficient elimination is the source of many diseases, such as gall stones, appendicitis, tuberculosis, bronchitis, and other diseases of this type.

A gall stone is formed like a boy rolls a snow ball. Unless the snow is in the right condition he cannot roll it, and so it is with gall stones—the salts which are continuously passing through the gall bladder in combination with the sticky mucus form the nucleus of a stone which grows larger day by day, and regardless

of whatever produces this condition in the gall bladder, it must exist before a stone can form.

Jaundice and catarrhal conditions of the liver in general respond rapidly to my synthetic solution of the tissue salts.

Mr. K. had been troubled with dizziness, floating specks before his eyes, acid stomach, gas formation in the colon; developed a case of yellow jaundice. Was treated by several physicians with no results. After taking six intravenous treatments was entirely restored to health. The range of usefulness of the tissue salts when given intravenously may be judged by the following case records, which I have on file: Mrs. F., asthmatic, 14 years' standing. Had to call in family physician on an average of twice a week. Take a hypo to relieve attacks. Gave her six treatments. Recovery complete. Gained thirty pounds. No recurrence in 8 years. Mr. S., ulcers in stomach. Gave diet and rest cure in hospital for six weeks. Stomach washed out each day. No results. I gave him twelve blood treatments, one every third day. Complete recovery. Have another case on record of 12 years' standing. Cured with two treatments. Her husband was a stomach specialist.

Dr. M.—Case diagnosed tuberculosis of several years' standing, had given up practice on account of sickness. I sent him six doses of my Hæmatone, and he wrote me that, after taking six treatments, he had resumed his practice and was on the road to complete

recovery. Received a letter from him two years later and he was still well and very enthusiastic over the treatments.

Mr. F.—Case history of tuberculosis of the lymphatic system. Had a gland removed from under the arm and the test showed tubercular germs. I treated him one year later and found the glands of the neck enlarged. He was advised to have another operation. I gave him four treatments, one every day for four days. Did not see him for six months and he was then entirely well.

Mr. R.—Case neuritis of twenty years standing. After taking six treatments he has not had a recurrence in the last two years.

I might go on and enumerate case after case, to show you the wide range of disease treated by this method, with marvelous results.

Protozyme is composed of the enzymes taken from the ductless glands of the lower animals and combined with proteins by my special method.

The term Protozyme and method of use originated with me.

It should be given in 3 to 6 c.c. doses hypodermically, at least once per week to activate the ductless glands and internal secretions in general.

After making a special study of the ductless glands and their relation to health and disease, it is my belief that the extracts of these glands may be used advantageously in the treatment of disease. While the ductless glands, no

doubt, have very important functions to perform in the organism it seems to me that they act as chemical laboratories where the blood undergoes changes and takes up certain reagents which have specific action on the other glands and organs of the body. It is certain that these glands cannot perform their function when the blood supply is cut off and it is also reasonable to believe that normal blood is necessary to proper glandular activity.

Pepsin is secreted by the peptic glands of the stomach only when food is taken which causes a flow of blood to this organ, but if pepsin is prescribed for any length of time it will cause an atrophy of the peptic glands of the stomach and defeat the ends for which it was intended.

This same thing is true of all the ductless glands, and while these extracts may have their place for temporary relief in acute cases it is best not to prescribe them for a long period of time.

The alimentary canal is a wonderful piece of mechanism and is largely under the control of the nervous system. The brain and organs of sense take a large part in the digestive processes.

The saliva begins to flow when you see, taste, or smell something you like to eat, and frequently when we are busily engaged we forget to eat. The chemist of the kitchen understands this principle when he puts the apple in the roast pig's mouth, coloring in cakes and ices, and parsley on meat.

We also have the surgical "bug" who claims all forms of indigestion are due to disease of the gall-bladder or appendix, and the Hydrotherapist who flushes out the colon for everything from the pyorrhœa to the piles, and the rectal specialist who begins at the bottom and works up for all diseases. Too bad the all-wise Creator did not make us with one straight gut like the pelican, thus saving us from a multitude of operations and nature fakers.

I am inclined to place serums and vaccines in the same medical junk heap of exploded theories. Our ancestors will think us foolish for using them, as we do our forefathers for bleeding in all cases.

In Japan every child is vaccinated when a few days old and the individual is revaccinated several times before the age of twenty, and yet statistics show that more people die from small-pox in Japan than in countries where vaccination is not compulsory.

If anti-bodies can be produced in the blood with the tissue salts why use vaccines which are toxic?

In streptococci infection sodium phosphate is a very potent remedy given intravenously in combination with calcium creosote.

In pneumonia, calcium creosote and sodium salicylate are very proficient agents.

The advent of salvarsan on the field of therapeutics has ushered in a new era in the treatment of specific blood diseases.

It is my opinion that the old line treatment of these diseases with mercury and potash did more harm than the diseases would have done themselves, if allowed to run their course.

Locomotor ataxia is claimed to be caused by syphilis, because statistics show that 75 per cent of these cases have had specific blood poison.

I consider that it was the mercurial treatment of this disease that caused the locomotor ataxia instead of the disease. I have noticed that lead poisoning, copper and nickel poisoning, also will cause this disease—the toxic effect of poisonous metals in general will cause nerve troubles of this nature.

The lightning pains and cramps in the muscles in locomotor ataxia respond to the intravenous treatment with my solution of the tissue salts, which contains calcium.

Calcium is now being used as an antidote to bichloride of mercury poisoning. One grain of calcium sulphide for every grain of mercury should be taken every hour for twelve hours to relieve the mercury poisoning. Magnesium phosphate is useful in mercury poisoning.

I very seldom use any mercury in the treatment of these diseases. With such remedies at hand as salvarsan and sodium cacodylate, the use of mercury is inexcusable.

The intravenous treatment of germ diseases with chemical agents which destroy life in the aggregate, without injuring the body cells is the coming and most rational method of treat-

ing disease. We must get away from the idea of pumping the system full of dead germ soup to cure disease. My alterative solution of the tissue salts also contains a non-toxic form of arsenic, and if given in courses of six treatments every three months for a year, is very effective and harmless in treating diseases where an alterative is indicated. I prefer this treatment to neosalvarsan.

In rheumatism, I use a solution of the tissue salts in combination with salicin. In the acute forms I give a dose every day until the symptoms subside. In the chronic forms I give the treatments twice per week until a cure is obtained.

From a standpoint of Biochemistry all disease is a form of starvation. All the organic constituents of the body are bountifully supplied by the foods. Scarcely ever is disease caused by a deficiency of the negative elements.

The fats and carbohydrates are composed of oil, starches, sugar, dextrine, and grape sugar, chemical constituents C. O. H. They are all negatives and form ($CO._2$). An excess of this gas impedes the process of oxidation and prevents the elimination of the metabolites, interferes with digestion, and causes cyanotic conditions.

The nitrogenous food elements such as proteids, albumin, and gluten are composed of the elements C. O. H. N. P. S. They are all negatives, and in the process of digestion form carbonic, uric, sulphuric, phosphoric, hippuric

acids, and the poisonous alkaloids, xanthin, creatine, and ptomaines, all of which cause disease when not properly eliminated.

The positive elements of the body are the tissue salts K. Na. Ca. Mg. Fe. They are acid binding and eliminating. These positive alkaline mineral elements neutralize the destructive poisonous acids which are the metabolites or waste products formed in the digestion of the carbohydrates. If there is a lack of these alkaline tissue salts in the blood, the acids will take them from the bones and tissues, causing rachitic, scorbutic, and wasting diseases.

Nervous energy, or animal electricity, is produced by the metallic elements, iron and magnesia, in the blood. Lime, magnesium, flourin, and silicon form the cell-skin, colloidal membranes, bony framework, and connective tissues.

The organic salts of the blood are sodium chloride, sodium carbonate, and sodium phosphate.

Materia medica from a standpoint of Biochemistry solves itself into a study of the five cell-salts.

The cell-salts enter the cell and unite with its protoplasm, and are essential to protoplasmic activity.

The following is a list of chemicals used:

Iron phosphate (soluble).
Magnesium, glycerinophosphate.
Potassium phosphate dibasic, or glycerinophosphate.

Calcium, glycerophosphate, and sodium of phosphate.

Silicon, Amorph, soluble.

Alkalies, such as sodium silicate and potassium silicate.

I use mostly the phosphates of the salts. I never use the chlorides or sulphates of the salts, with the exception of sodium, as they are formed in the system in the process of metabolism and all nature needs is the base to work with as hydrochloric and sulphuric acids are found in the system and combine with the salts to form the chlorides and sulphates.

While biochemists in most cases use the tissue salts single, I get the best results by using in combination two or more, and frequently five, of the stock solutions which are given intravenously. Some physicians will prefer the twelve tissue salts as outlined by Dr. Scheussler. However, the sulphates and chlorides will be formed in the process of metabolism and so far as minute dosage or triturates are concerned, these remedies are classed as foods, and the system will take up what is required to supply any deficiencies, and eliminate the rest, as is the case with all other foods so long as they are not given in doses large enough to form concentrations which will interfere with osmosis, according to the laws laid down for colloidal membranes in my chapter on cellular physiology.

Ferrum phosphate is the remedy for inflammation. It will reduce the fever and cure a

cold better and quicker than aconite or coal tar products.

Give it in pneumonia, pleurisy, headache, sore throat, rheumatism, hemorrhages, swelling boils, bed wetting. Combine it with magnesium phosphate where the pain is severe, as in colic, neuralgia, chorea, hysteria, asthma. It is a tissue restorer indicated in tuberculosis, kidney trouble, diseases of old age, leucorrhœa, chlorosis, painful menstruation, scrofula, anæmia, dyspepsia.

Liquor calcis is a great remedy and may be used internally and externally with good results. As a wash for ulcers and open sores of every description it will prove very effective. I use it as an injection in urethritis almost exclusively, with the exception of when I use a little castile soap and water, the curative result of which is due to the potassa it contains.

Liquor calcis is also a very good wash in chancroids and in syphilitic and varicose ulcers. In these conditions it supplies to the part the cell salt necessary for the building up of the cell walls and new tissues.

A good eye wash may be made by taking one part of liquor calcis and a saturated solution of Berberine muriate, four parts, filter to clear up the solution.

Iron and calcium makes a good combination in chlorosis, anæma, tuberculosis, and catarrhal conditions of the alimentary tract. In summer complaints of children they cure where all

others fail. These two remedies have a wide range of usefulness; they are astringent, tonic, alterative, antacid, refrigerant, antiseptic and nontoxic. Why use other drugs to get the above effects?

MAGNESIUM is indicated in all painful conditions, such as neuralgia, angina pectoris, gall stones, painful menstruation, and after-pains of pregnancy. You will find that it will work better than opiates in these conditions. Intravenously with a normal saline solution it has proven effective in streptococci infection,

Potassium is the brain salt and works good in combination with magnesium. Potassium is indicated in brain fag, insomnia, epilepsy, chorea, neurasthænia, etc.

Potassium is a worker in fibrin and is useful in all fibrinous exudations, leucorrhœa, asthma, bronchitis, dysentery, and catarrh.

Sodium and its various salts are among the most valuable in the materia medica.

This salt maintains the water balance of the system. In biliousness, flatulent colic, diabetes, influenza, torpid liver, and toxic conditions of this type, sodium sulphate is the indicated remedy.

Sodium chloride is a sovereign remedy in all watery exudations from the mucous membranes; pain and vomiting of clear mucus, eyes water, coryza or catarrh, intermittent fever, thirst and headache with constipation. It makes a good eye wash, and a pinch in a glass of hot water on arising in the morning has cured catarrh of the stomach, and hemorrhages

of all kinds. However, the regular calcreose solution is the best in these conditions.

Creosote is destructive to the bacilli tuberculosis and the pneumococcus, as well as all other pus forming bacilli.

Calcium is also a very essential element in tuberculosis and pneumonia, and if not furnished, the bacilli will rob the cells of their calcium in their reproduction, as nature builds a wall of calcium around the tubercles in consumption. The fibrinous exudation of pneumonia is due to a loss of calcium.

In pneumonia I give a solution of calcium creosote, teaspoonful dose every hour internally and every day five c.c. injections of my intravenous formula. I use practically the same treatment in tuberculosis, only not so frequent.

In third stage tubercular cases I have cured mixed infection by this treatment in three weeks' time and in many instances have effected a complete cure, while in the first and second stages this treatment proves very effective. I have used calcium glycerophosphate, which is soluble in water or milk, with good results.

Calcium regulates and stimulates the heart action, promotes cell division, builds up the cell skin of the cells and increases all glandular activity, thus promoting the normal secretion of all body fluids concerned in metabolism such as pepsin, trypsin, adrenalin, and the various antibodies and harmonies, which are so

necessary in all the vital processes. Its intravenous use is very good in hemorrhages.

Blood plasma has a tendency to transude through the epithelial wall between the blood vessels and air spaces into the lungs where it coagulates in the presence of oxygen, thus causing solidification.

This is the pathology of pneumonia from a standpoint of biochemistry. The pneumococci must have calcium for their reproduction. This is proven in the way they propagate on calcium carbonate broth in the laboratory. They attack the cells and rob them of their calcium, thus causing a breaking down of the cell wall. The salts of potassium and magnesium are also taken up to some extent. This weakens the cell walls formed by the epithelium, destroying or lowering its osmotic pressure as a colloidal membrane to the fibrin of the blood; at the same time the fibrin of the blood is acted upon so as to admit of its passage through these membranes with greater ease. It is thus allowed to pass into the air spaces, where it coagulates.

There is an excess of hydrochloric acid in the stomach for the simple reason that the calcium and alkaline salts that ordinarily hold it in solution or neutralize it have been used up in the pathogenic process. Calcium is necessary to stimulate leukocytosis. Gray hæpatization, fatty degeneration of the fibrin and leukocytes, are impossible without calcium. Collapse of the heart, œdema of the lungs, and convulsions are due to a loss of calcium.

Calcium salts increase the viscidity of the blood and reduce the coagulation time.

This lack of viscidity of the blood as well as the increased permeability of the cell walls which form the epithelial colloidal membranes of the kidneys are the cause of albuminuria. I have explained in another chapter how improper oxidation and the consequent diminished elimination of the acids cause the cells of the tissues to be robbed of calcium and other alkaline salts. Nature's method of getting rid of these acids is by neutralizing them. Of course, if the overproduction of acids is kept up for a long time by overeating and underbreathing, disease will follow.

I have cured the worst cases of albuminuria by the administration of the tissue salts. Ten grains of calcium phosphate, three times daily, in a glass of milk, is a sovereign treatment for this trouble. Many of the mineral springs of the country owe their curative properties to the tissue salts which they contain. There is one at Stafford, Mississippi, whose waters contain every one of the tissue salts, which is noted for its wonderful cures.

Functional albuminuria of children, often caused by rapid growth, of course exhausts the calcium salts of the cells. Calcium phosphate, ten grains, three times a day, will work wonders.

Diabetes mellitus will respond to sodium sulphate because it regulates the water supply to the blood and is a carrier of oxygen, that is,

it liberates the oxygen in the liver, thus decomposing the sugar and prevents it reaching the kidneys as such. It reduces the viscidity of the bile. It works well in combination with ferrum phosphate and potassium phosphate, as there is a deficiency of these salts which causes the nervous symptoms. If there is a great emaciation calcium phosphate is indicated.

As to diet, the patient should eat a little at a time and eat often. Overloading the system with greasy food is contra-indicated in all pathological conditions.

Bright's disease, a chronic form of albuminuria, is due to a deficiency of calcium phosphate, as this salt reduces or increases the viscidity of the blood as the case may be. Lime and albumin are always indicated by frothy bubbles rising in the urine. Of course a deficiency of lime is always followed by iron and potassium, with nervous symptoms, which always follow a deficiency of these salts. The passing of albumin is due to the lack of viscidity of the blood, which reduces its osmotic pressure and calcium is the salt that controls this condition.

Calcium creosote in combination with iron is good in these cases.

Oxidation

Oxygen is the chief element in nature. Over one-fifth of the substance of the globe is composed of this element, and all the mechanical activities of the world depend upon it.

Every vital manifestation of animal life depends upon oxidation. In our study of this element with its relation to physiological chemistry we will find that the secretion of every gland of the body is carried on by a process of oxidation; furthermore, that digestion, assimilation and elimination, depend entirely upon oxidation.

The carbohydrates are important as food simply because they contain carbon, oxygen and hydrogen in a simple form easily decomposed, oxidized, or transmuted by gradations either up or down the scale, to form dextrose, glucose, lactose, levulose, etc. In fact they are stored-up solar energy. The vegetable kingdom is continually transmuting inorganic substances from the soil by a process of oxidation and carbonization into organic matter, principally in the form of carbohydrates.

The plant in the sunlight and air takes up matter from the soil in its sap and in the form of sugars, and when the seed is being formed this sugar is transformed into starch. One of the distinguishing features of plant life is the

power of changing the starch deposited in the seed back into sugar and again resuming the living state.

Going back to oxidation with which we are at the present chiefly interested, we shall see that by this process dextrin and all other ferments, which play an important role in the transmutation of vegetable into animal matter, are formed.

First, let us take up the subject of respiration in animals. Respiration might well be termed oxidation, for its chief office is the taking up of oxygen from the air and expelling carbonic acid gas from the lungs which is a product of oxidation in the animal tissue. I mentioned before that digestion, assimilation, and elimination depend upon oxidation. Uric acid, the by-products of digestion, and the toxins of infectious disease, must be split up by oxidation before they can be eliminated or they set up an irritation in the organism which chiefly affects the connective tissues as they are the most susceptible to irritation and have a tendency to proliferation and to hyperplasia when thus affected. Herein we have the genesis of cirrhosis of the liver, interstitial nephritis, locomotor ataxia, arterial sclerosis which spells old age, for when the arteries become sclerosed they lose their elasticity, consequently the circulation is impeded, the smaller arterioles are occluded, the tissue cells starve for food and oxygen and break down; elimination and assimilation must necessarily become affected and this is the condition which we term

old age and by which the animal dies a natural death of deoxidation.

Old Professor Metchnikoff need seek no further for the cause of old age, for if he can prevent arterial sclerosis which interferes with proper oxidation he has the Fountain of Eternal Youth. No wonder he thought he had the secret in the life of the sturdy mountaineers of Switzerland who live on sour milk and cheese, yet their longevity is due to the rarified mountain air which promotes oxidation rather than the lactic acid of sour milk.

DIGESTION

Let us discuss for a time the subject of digestion and its relation to oxidation.

For an illustration we will take the hibernating animals. During the hibernating state they breathe very slowly in some instances, not to exceed three or four respirations per minute, circulation is very sluggish and as a consequence digestion stops and life is kept up by absorption of the fats which the animal deposited in the tissues during the active state, elimination also stops with oxidation.

When the animal has consumed forty per cent of its body weight life will become extinct. This is a good gauge for your tubercular patients, as that is the process that takes place in this disease. Can there be any better proof than the hibernating animals that digestion, elimination and assimilation, in fact all manifestations of vital activity, depend entirely upon a proper oxidation?

From this we must assume that the cause of so much dyspepsia and indigestion, improper elimination and poor nutrition in our patients, is due to improper breathing, poor air or insufficient oxidation from some cause. Many people live and breathe like hibernating animals. They sit humped up over an office desk all day, breathing like these animals, and wonder why they suffer from sour stomachs and indigestion. Seventy-five per cent of all these thoubles are due to improper breathing, this of course in time causing a breakdown of the cell walls with a precipitation of the cell salts and as a consequence disease. The other twenty-five per cent, of course, are the sequelae of the first cause, deficient oxidation, and the only rational treatment is to supply the cell salts to the blood directly by intravenous injection which will supply the exhausted protoplasm with the elements which give it life and activity.

If the red blood cells through a degeneration of the cell-skin or plasmahaut have precipitated one-half their hæmoglobin or blood-iron into the serum, after which it is eliminated, it stands to reason that this element must be supplied along with the other cell salts, which help to hold it in solution, to build up the cell walls and also to increase cell division with the multiplication of new cells to supply the deficiency. This may be done by an intravenous injection of a harmonious solution of the tissue salts.

The same effect may be accomplished by having the patient exercise and breathe twice as fast until normal conditions are established by assimilation from the food; that is, providing the food contains all the cell salts. Another interesting fact is that glandular activity is aroused, the patient acquires an appetite and can digest the food taken after the intravenous treatment with the tissue salts. However, we shall discuss this mode of treatment under therapeutics.

Let us study a while the relation of oxygen to secretion by the kidneys. If in the frog you ligate the whole of the renal arteries, urinary secretion ceases and urinary flow cannot be induced even by an intravenous injection of urea.

We furthermore get a rapid destruction of the tubular epithelium. Going further, if we supply the frog with pure oxygen the portal circulation will send enough oxygen through the renal portal vein to oxidize the tubules The epithelium is thus kept intact and we will get a small flow of urine.

This experiment proves that the tubules have a secretory function and that function depends upon proper oxidation.

Next let us study the effect of oxidation on the nervous and circulatory systems. The vascular system is subordinate in its activity to the needs of the brain. The brain will insist upon a proper supply of blood and oxygen. To bring this about a certain height of arterial

pressure is necessary. If the brain does not receive a proper supply of oxydized blood the animal soon dies. As soon as the blood pressure falls low enough to produce an ischæmia affecting the vasomotor center, the latter sends down impulses by the way of the vascular nerves causing vaso-constriction. If this does not raise arterial pressure sufficiently, increased respirations and expiratory convulsions occur, tending to force the blood from the veins into the heart to compensate the circulation to the brain. This is what takes place in asphyxia, or if the animal be exposed to an atmosphere deficient in oxygen. This is what increases the cardiac and respiratory action in mountain climbing from rarified atmosphere. Thus we get an increased action of the blood-making organs and a consequent increase in the red corpuscles, which is beneficial to the patient, yet, if the same result can be brought about artificially without the taxing of the vital powers so much the better.

The above condition of the circulatory apparatus is brought about by anæmia and is the cause of chills and fever, colds, etc., which I shall try to make clear.

When there is a lack of iron in the blood, oxidation is affected, the brain causes a reflex constriction of the arterioles in order to keep up its supply of oxygen. This lack of circulation in the periphery causes the pores of the skin to clog up with waste matter which should escape by this route. There is as a

result an exudation from the mucous and serous membranes of the body causing catarrhs and colds, pneumonia, pleurisy, etc.

FEVER

There is not a medical writing extant that gives a good definition for fever. When there is a deficient supply of oxygen taken up by the blood, from a lack of iron and potassium in this fluid, in order to do its work properly the circulation must be increased. This increased motion is changed to heat. This molecular disturbance soon breaks up the continuity of other cells. We get a rapid decrease of the iron in the blood followed by a decrease of potassium chloride if iron is not soon supplied, also an acid reaction. A deficiency of this salt in the blood will cause a defibrination of same. The toxins of the bacillus pneumococcus affect the plasmahaut, precipitate the cell salts, especially calcium and sodium phosphate and potassium chloride, which is followed by the blood iron. This brings about a defibrination of the blood which is the pathological change in pneumonia. It is possible that the heat of the blood with lack of oxygen liquifies the fibrin and allows it to pass into the air spaces of the lungs.

Heart failure may be due to insufficient oxidation of the blood. The brain demands a full supply of oxydized blood and will exact the same to the last drop at the expense of every other organ of the body. A lack of oxygen in the blood will have the same action on the

brain as a loss of blood to the circulation. The heart will have to pump much harder, thus increasing the velocity of the blood to the famished brain centers to furnish the required nutrition which could be supplied by half the amount of blood up to the physiological standard in cell salts.

The function of the heart is to maintain the constant passage of blood between the arterial and venous sides of the vascular system. Taking it from the venous side at a low pressure it pumps it into the arterial system at a high pressure.

Anæmia stimulates the vaso-motor centers to call for nutrition and oxidation which produces a universal constriction of the venous circulation, palpitation of the heart with increased action to supply the demand which doubles the work of the heart. This increased action of the heart, if kept up for any length of time, causes hypertrophy which in time will be followed by dilatation, with a loss of compensation and death.

Thus we see that for every ischæmia there is a corresponding hyperæmia. If the peripheral vessels are contracted, those supplying the deeper parts must be dilated if the sum total of the circulating fluid remains the same. There must be an accommodation somewhere, and as a consequence the liver and other glandular organs become congested, there is a hyperæmia of the mucous membranes with mucous discharge, and a discharge of the water

of the blood into the perivascular spaces, causing a condensation of the blood, thus restoring the equilibrium for the time being.

A blood count or hæmoglobin test at this time would appear normal on the account of the blood condensation while the circulating fluid has been decreased. This condition must soon be remedied as it will be followed by thirst with an intake of fluids and a consequent dilution of the blood causing hydræmic plethora, the brain centers will become exhausted by the long strain in maintaining the blood pressure and relax. The circulation becomes sluggish, carbon dioxide will accumulate in the blood with all the other debris that has been accumulating during the spasmodic constriction of the arterioles.

Nature comes to the rescue and will heal the person if given a chance. It is a well established fact that whenever there is a lowered blood pressure with a lack of oxygen tension and increased carbon dioxide in the blood, these three factors set up an irritation of the blood-making organs with a production of red corpuscles. Right at this period in the disease is where the wise physician can come to nature's aid as the food may not furnish the tissue salts especially hæmoglobin, to fertilize the young blood cells and they shrivel up and die. An intravenous injection of the tissue salts at this time will work wonders and good results may be had by giving the tissue salts internally.

APOPLEXY vs. PLETHORA.—The beneficial results from high altitudes is due to the lowered oxygen tension of the air which increases the red blood corpuscles. If we poison an animal with $CO._2$ gas we will find an increase in the red corpuscles and the lowered blood pressure. If we get both these conditions at the same time nature cannot supply the iron to build up the hæmoglobin of the new born cells which would increase the intake of oxygen with the expulsion of the $CO._2$ gas. Consequently, if the iron is supplied to build up the hæmoglobin of the new born cells, it would increase the intake of oxygen with the expulsion of the $CO._2$ gas. Consequently if the iron is not supplied a condition of plethora, a thick heavy blood in excessive quantities, is produced in the vascular system, which cannot, on account of the lack of oxygen bearing proclivities, nourish the vasomotor center in the brain. The brain telegraphs the heart to pump faster, all the other tissues and cells are starving for oxygen and breaking down, soon some of the weak blood vessels of the brain as a result of the high blood pressure and the pounding away of the heart trying to compensate give away and the patient dies of apoplexy.

Nature kills the patient in an effort to cure him. From what is just said regarding blood pressure you may account for the beneficial effect of blood letting of our forefathers. This blood letting called into play the recuperative processes just mentioned, increasing the red cells and, with good food and pure air, the

normal standard of the blood was maintained. As a result the same benefit was derived as we get now from a trip to the mountains.

CYANOSIS

The cell salt sodium phosphate holds the $CO._2$ in a weak union and, while a great many cases of carbon dioxide poisoning are due to lack of this salt in the blood, the majority of cases are due either to living in an atmosphere with a lack of oxygen in the air, as in ill ventilated rooms with furnaces and stoves which discharge $CO._2$ into the air of the room as well as consume the oxygen, or, to a lack of iron in the red blood cells which is absolutely necessary to take oxygen from the air and at the same time set free the $CO._2$ gas from its loose union with sodium phosphate.

There should be about forty-five centimeters of carbon dioxide in every hundred cubic centimeters of venous blood. This gas is three times more soluble in the blood than is oxygen. It has a function to perform. When this gas accumulates in the blood it sets up an irritation in the nerves of the blood vessels which is telegraphed to the respiratory center in the medulla. The result is inspiration taking in oxygen followed by expiration throwing out the $CO._2$ gas set free by the intake of oxygen. Thus $CO._2$ gas keeps us alive while we sleep, by the irritation set up in the respiratory center in the medulla from the nerves of the blood vessels. Summing up you can see how anæmic conditions due to a lack of blood-iron or

breathing an atmosphere deficient in oxygen will disturb the whole circulatory and respiratory systems. Rapid breathing is due to the accumulation of carbon dioxide which in turn is caused by insufficient oxidation.

OBESITY

The person who is excessively fat has a lack of ferrum phosphate in the blood which of course means that the person is underoxidized, allowing the fats to be stored in the tissues that were intended to maintain the heat of the organism.

Nature comes to the rescue by storing the fats in the areolar tissues of the body and by a system of conservation of heat similar to a thermos bottle. The normal temperature of the body is maintained. Clinical records show that we have a very grave form of anæmia in obesity.

Circular No. 31 of the U. S. Bureau of Chemistry proves by a physiological test of twelve young men in the department that the salicylates increase the red blood cells for a time, this proves conclusively that the benefit derived from the salicylates in rheumatism is brought about by increased oxidation due to the increase in the red blood corpuscles. However, the good effects derived from oxidation are counterbalanced by the bad effects on the digestive and circulatory organs. I might elaborate on this subject enough to fill volumes. All the mechanical and physiological activities of the world are due to this chemical change.

The curative results obtained by those who practise physiological therapeutics are due to proper control of the circulation. The condition of the system known as the uric acid diathesis has its genesis in improper breathing or other causes which interfere with proper oxidation of the blood and tissues. As a consequence the acids formed by the metabolistic process going on in the system are not split up by oxidation and eliminated. Nature again comes to the rescue and tries to neutralize the acids in the system by throwing out the alkaline salts of the tissues and bones, thus in trying to cure the patient creates new diseases such as scorbutis, rachitis, decayed teeth, and a breaking down of the colloidal membranes of the body from the absorption of the lime salts of the cell walls, and thus would be ushered in the chronic stage of the disease. At this stage, if the tissue salts are not supplied to rebuild the cell walls the cell salts will be precipitated, and the blood iron eliminated, making it impossible for nature to restore the equilibrium. As a result of the breaking down of the colloidal membranes we get albuminuria, dropsy, catarrh, jaundice, and nervous prostration.

Again nature kills the patient while making a supreme effort to cure him.

Nascent sulphuric acid is formed during the oxidation of albumin. It unites in the nascent state with the alkalies of potassa and soda liberating their carbonic acid, otherwise it would destroy the tissues. For this reason it is not

necessary to give the sulphates of these salts, as they are formed by a natural process.

Tuberculosis as well as all the acute and infectious diseases of childhood are due to lowered resistance caused by insufficient oxidation.

So long as innocent children continue to be asphyxiated in overcrowded and ill-ventilated school rooms, using their little brains five hours per day which is more devitalizing than twenty hours manual labor, while at the same time they are required to remain perfectly quiet in their seats, thus further impeding the circulation of the blood, just so long will they be carried away by the ravages of the acute infectious diseases of childhood.

People living in valleys where the oxygen tension is high get into the habit of using only part of the lung surface, thus allowing part of the cells to become closed up from non-use, causing a breaking down of the tissues and predisposing to infection.

In closing this chapter I would suggest that you impress upon your patients the value of deep breathing and pure air. In fact, perfect oxidation is just as necessary to digestion as eating. There can be no assimilation without proper oxidation. Water, air, and light form the triad of life. If the earth were deprived of any one of these, all animal life would soon cease to exist. The all-wise Creator has given us a bountiful supply of these. If properly used they will prevent 90 per cent of the infectious diseases and cure nearly all curable

diseases. Lowered blood pressure especially on the venous side interferes with oxidation. This may be due to a lack of calcium in the blood cells, as this salt seems to increase the action of the heart as well prevent fibrination of the blood, thus allowing it to pass through the colloidal membranes with greater ease, as the protein content of the blood stream regulates its osmotic pressure, which in turn affects the blood pressure in general. Valvular disease of the heart as well as disease of the kidneys and liver which obstruct the circulation will also affect blood pressure, which in turn will interfere with proper oxidation. There is nothing better than systematic massage or osteopathy to restore the vital equilibrium to that extent where nature can continue the process, as the patient with a lowered blood pressure is in such a devitalized condition from the accumulation of toxins and waste products of metabolism which have been caused by lowered pressure, that it is impossible for nature to overcome the obstruction unless aided by some mechanical means. Drugging will be of little avail as it will furnish only an artificial stimulus to organs which on account of lowered resistance will not respond and you have only added more poison to that which has already accumulated in the system and has to be eliminated.

In deep breathing the vacuum formed by the suction of the diaphragm pumps the blood from the veins and along with massage forces the blood past the valves in the veins, thus forcing

it on towards the heart as it is done by the contraction of the muscles in health. This will establish a normal blood pressure and circulation, followed by proper oxidation, assimilation, elimination, and health.

During the carboniferous period vegetation grew rank and luxuriant, and monsters roamed the earth living to be hundreds of years old. This was due to the fact that there was less oxygen and more carbon in the atmosphere than there is at the present time.

If by some atmospheric change the oxygen balance in the air should be increased one per cent, we would rush through life like the ephemoral butterfly and die of old age at twenty. Thus we see how the supreme intelligence that created the universe has amply provided for our physical well-being.

Intravenous Medication

The subject of intravenous medication is occupying the attention of the majority of progressives in the medical profession at the present time.

I have been experimenting with this line of medication for twelve years and have treated several hundred cases by this method with very potent results and without the slightest complication in a single case.

It was held by eminent men in the profession that active chemical agents could not be introduced into the blood stream and that a small bubble of air would cause a clot resulting in air emboli.

On several occasions I have allowed a small bubble of air to enter the vein with no ill effects. I scarcely think that any danger could come from an air bubble unless it were large enough to obstruct one of the auricles or ventricles of the heart.

As the effects of all medication, when taken internally, are brought about through the circulation, it stands to reason that the most direct method is to introduce the agent into the blood, thus avoiding the contamination of same in the alimentary canal by the secretions and foods.

The action of a drug given by this method is much quicker and obtained with smaller quantities of the drug. and at the same time it is eliminated quickly from the organism.

I have used a number of solutions of various drugs intravenously, in cases treated, but the greater part of my work has been confined to the tissue salts, calcium, potassium, magnesium, sodium, and iron. In connection with these, I have used sodium salicylate, bichloride of mercury, sodium cacodylate, lithium benzoate, eurotropin, arsenic, calcium salicylate, and possibly others which I do not now recall.

It has been my experience that any aqueous solution of the above drugs in doses of the size in which they are given internally may be given intravenously with practically no danger and with more potent results.

These remedies are of known value in cases where they are indicated when given internally; naturally their curative results are due to the effect on the blood or through the blood, and this being the case, it stands to reason greater results may be obtained when they pass directly into the blood stream.

In the great majority of cases, I use a harmonious solution of the tissue salts with a little guiacol or creosote along with arsenic and salicin. My reason for using the tissue salts are outlined pretty thoroughly in my chapter on the materia medica of these salts. They are the positive elements of the body and are used as natural reagents in physiological

chemistry to make up the molecular chain which carries on the chemistry of life.

Salicin is a natural constituent of apples, strawberries, tomatoes, and various foods, and has proven of value in rheumatic conditions; it also increases the red blood cells, is alterative, and inhibits the proliferation of connective tissue cells. The arsenic is used as a reconstructive, alterative, and hæmotonic in syphilis and in various skin diseases and discrasias due to inherited blood taints.

Calcium and creosotes are indicated in tubercular cases in combination with the other tissue salts.

Calcium creosote is a very good preparation to use as the basis for making your solutions. It is composed of calcium and pure beechwood creosote in chemical combination. I have been using this preparation in making my intravenous solutions for some time and find it up to the standard, and at the same time it simplifies the process of preparing the solution.

In syphilitic cases I give the injection twice per week and I add to each injection just before using sodium cacodylate, ten grains, alternating at the next injection by adding 1/40 grain of the bichloride of mercury instead of the sodium cacodylate.

Sodium cacodylate is a good adjunct to the treatment in the various forms of skin diseases where arsenic is indicated.

For the past twelve years I have been practising intravenous medication almost exclu-

sively, and I am, so far as I know, the originator of the method of inserting the needle in the vein without cutting down on same.

I have given not less than fifteen thousand intravenous injections and find it the most potent way to treat disease. I recently held a clinic where I gave fifty intravenous treatments per day for five days to all ages and sizes, and did not in a single instance miss the vein. In intravenous medication, as in all other things, practice makes perfect. You may read about the technique, but you will have to have the real practice in order to become proficient. I would as soon give an intravenous treatment myself, as to give one hypodermically.

I use an all glass 10 c.c. syringe, and a 27 gauge three-quarter inch slipon needle. I keep a small piece of razor hone at hand to sharpen my needles.

Ordinarily, I use a needle about one dozen times except on infectious cases, where I destroy the needle after using.

Immediately after using the needle, I force hot water through the needle and syringe to remove any blood that forces its way back into the syringe when the needle is introduced, next I sterilize with a solution of 33⅓ per cent phenol and water, leaving the syringe standing in the antiseptic solution until ready to use on the next patient. I take a pleget of cotton and sterilize the arm with the same solution before inserting the needle. Iodine may be used, but I find that phenol answers the purpose very well.

I have never had an infection in all of the cases I have treated. After removing the needle, I apply flexible collodion to the part.

I use one-inch muslin bandages for a constrictor, wrap it around the arm twice, and tie in a bow knot, on the upper side of the arm just above the elbow to raise the vein. This is easily removed after the needle is inserted.

To give the injection, seat your patients in a chair in a manner represented in the cut on another page of this book. Lean them back gently and tell them to look away from the operation. This will avoid nervousness and fainting from the psychic effect.

Place your constrictor as above, insert the needle, withdraw piston to ascertain if in the vein. Next remove the constrictor and empty the syringe very slowly, taking at least one minute to give injection, otherwise the solution will irritate the vein.

It has been my experience that there is less toxic effect from giving a drug intravenously than intramuscular. I use Neo-salvarsan dissolved in 10 c.c. distilled water intravenously with very little toxic effects.

A drug given intravenously is in a more direct route to the eliminating organs, and is eliminated more rapidly than where taken per mouth or intramuscularly.

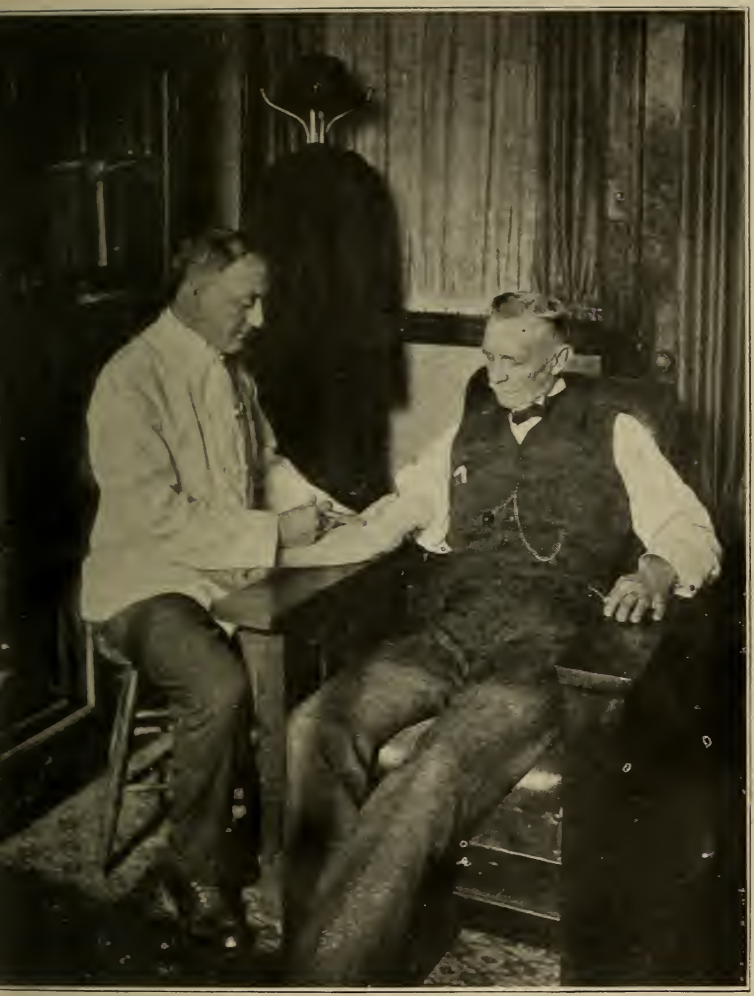
As large a dose of bichloride of mercury may be given intravenously as by mouth, and there is very little danger of salivation. When given by this method in conjunction with cacodylate

of soda or when added to the general formula given on another page, it destroys the spirocheta palada in the blood, and is rapidly eliminated by the kidneys.

In dropsical conditions, sodium sulphate, ten grains to the ounce and sodium chloride, two grains to the ounce of water, will produce a diuretic effect by its irritation on the tubules of the kidneys and at the same time it extracts the fluids from the inter-cellular spaces into the blood vessels, thus eliminating the same.

I have given the basis of the formulas that may be used with good results in the various diseases you are called upon to treat. I will leave it to the physician to give the treatments as often as indicated in the conditions as you find them.

In pneumonia we get a very dense or viscose blood and one of the chief objects to be attained in the treatment of this disease is to keep the blood at the normal density. While the treatment outlined with the tissue salts acts very good in these cases, it is good practice to give sodium citrate in 30 grain doses every two hours to adults, children in smaller doses; this will control the blood density very nicely. However, it has been my experience that the intravenous treatment with the tissue salts reduces the density when it is too high and increases it when it is too low, especially in chronic cases. Sodium sulphate might also be given to reduce the blood density, in ten grain doses intravenously. However, I have not tried it out in acute cases.



INSERTING THE NEEDLE

The most direct and potent method of giving medicines is hypodermically intravenously, and by inhalation. I have used these methods almost exclusively in my practice for the past fourteen years with more than satisfactory results. I venture to say that these methods will be used universally in the near future.

Blood Pressure

Scientists are devoting considerable time to the subject of blood pressure at the present time, as the circulatory and nervous systems are very closely related and dependent upon each other.

We have studied in another chapter how the brain demands and maintains a constant blood supply by a vaso-constriction of the venous side of the circulatory system. This is brought about automatically by a center in the brain which is stimulated to action by any impoverished state of the blood or loss of blood from the circulation.

We also have the thermotaxic center in the medulla which is affected by the temperature of the blood, causing a vaso-dilation or vaso-constriction of the arterioles as the case may be, thus regulating the heat of the body.

The respiratory center in the medulla is stimulated to action by the accumulation of carbon dioxide gas in the blood which irritates the nerve endings and makes us breathe. This is why, when there is a deficiency of potassium or magnesium in the nervous system, the nerve fibers are not as sensitive to irritation and as a consequence do not react to stimuli, thus allowing the accumulation of carbon dioxide gas in the blood, which prevents proper oxidation

even when there are plenty of red blood cells and hæmoglobin in the blood. This condition is called plethora and is found in apoplexy. These patients are slow breathers and under-oxydized.

We will now study the relation of blood pressure to psychic conditions brought about by mental activity, or in other words, psycho-neurosis.

The mercury sphygmomanometer is the most reliable instrument.

The spring instruments get out of order easily.

A blood pressure ranging between 0 and 40 would indicate syncope, unconsciousness, fear, or terror.

A blood pressure ranging between 40 and 70 would indicate indolence, dejection, fatigue.

A blood pressure ranging from 70 to 100 indicates gentleness, modesty, timidity. This is the zone of indifference. Blood pressure ranging from 140 to 160 the person begins to get noisy and gay.

When the pressure ranges from 160 to 180 we find the person in the zone of indignation, courage, boastfulness.

In mental conditions associated with tears, wild laughter, and nervous irritation the blood pressure is around 200.

Mental conditions associated with great fury, destructiveness, the blood pressure will range around 240.

Mental conditions indicated by paroxysms and a desire to kill, the blood pressure ranges around 260.

The above readings are given to show the relation of blood pressure to mental conditions or states of the mind. This gives you a plausible reason for the results obtained by those who practice mental healing, as a little experimenting will prove to you conclusively that mental states affect the blood pressure and anything that affects the blood pressure affects the physical well-being for good or ill, as the case may be.

We also have our answer why individuals who suffer from pathological conditions which affect their range of blood pressure are affected mentally, because they cannot compensate for changes in blood pressure. The liver in health is the great compensatory organ for the regulation of blood pressure. People with liver trouble are hypochondriacs. Statistics prove that a great many suicides suffer from liver trouble.

The normal systolic blood pressure ranges from 105 to 145 millimeters in adults, in children of over two years from 85 to 110. In females the pressure is about ten millimeters less than in males. The normal diastolic pressure ranges from 25 to 40 millimeters below the maximal pressure. The normal pulse pressure ranges from 25 to 40. A continued systolic pressure above 150 or below 100, and a

pulse pressure above 50 or below 20 may be regarded as pathological.

As blood pressure varies with excitement, at different times of the day, and after eating and the taking of stimulants or depressants, we must take all these things into consideration on taking the blood pressure.

The following diseases will show a high blood pressure: arteriosclerosis, angina pectoris, aortic insufficiency, chronic nephritis, cerebral hemorrhage, cirrhosis of liver, eclampsia, gout migraine, pregnancy, toxæmias and uræmia.

The following diseases, on account of their neurotic origin, will show a variable pressure; asthma, coma, bronchitis, exophthalmic goiter, insanity, menopause, neurasthenia, pleurisy, and rheumatism.

Diseases associated with lowered vitality will show a low blood pressure, such as tuberculosis, acute diseases, anæmia, dilitation of the heart, cholera, diabetes, exhaustion, shock, hemorrhage, diarrhœa and starvation.

Blood density and blood pressure are closely related since the density or viscidity will affect the blood pressure.

Where you find a high blood pressure, that is a persistent high pressure without other pathological conditions present, you will find a very dense blood, especially where you have a high systolic pressure, as it is harder to pump a dense blood through the capillaries than it

would be a thin, watery blood, like we have in hydræmic plethora or anæmia.

The normal blood density is around 1060. I very often make the blood density test instead of the blood pressure test, and it is good practice to make both tests.

To make the blood density test I use an ordinary urinometer that is graduated to 1060.

I fill the tube with commercial chloroform and add ether until the density of the solution is 1060, that of normal blood. I then take a drop of blood from the finger and drop it into the solution. If it sinks to the center it is of the density of the test solution. If it rises to the top it is of a low density. and if it sinks to the bottom it is of a high density. By graduating the sides of your test tube on making comparisons with the blood pressure apparatus you may estimate your blood pressure. Benzine or any other liquid which can be reduced to a density of 1060 may be used for making the test.

You will note by a study of this instrument how the blood pressure is affected by various states of the mind, or how one psychic center in the brain affects another, thus raising or lowering the blood pressure, producing the various psycho neurosis and also affecting the vital activity of the body, producing disease or health as the case may be.

There is no doubt but that all mental states are indicated physically and have a wonderful effect on physical well-being.

When we become angry to a slight degree the face flushes and when intensely angry there is a vaso-constriction and the complexion pales. A slight mental shock will flush the face of the bashful maiden quicker than the maximum dose of atropine.

Physical changes are produced by excitement, and excitement may be aroused by physical changes. It is a poor rule that will not work both ways. This is proven by registering the arterial pressure with the manometer described above.

A nervous person becomes angry when their slightest desires are not satisfied. For instance, if a nervous child is ordered to stop playing and go to bed there is a great mental shock produced.

The subject of play occupies the whole mental field of the child, producing an accumulation of attention and energy in the motor zones of the brain which remains and demands exhaustion.

He naturally exhausts this nervous energy by flying into a fit of passion and when subdued by force tears of impotent rage flow which finally consoles him and relaxes the excitement of his brain.

If the manometer be applied to this child it will rise to perhaps 260, the degree of pressure producing the desire to kill or mania transitoria.

But being overcome by force and weeping at his lack of power the arterial pressure will

gradually go down to 40, the stage of dejection and fatigue, and he falls asleep from exhaustion. Anger is thus shown to be an excitement of the passions with or without great impulse.

The person who lacks self-control is excited by every little incident, while the man or woman who possesses self-control can hold the passions in abeyance and achieve his or her purpose in another way.

Another thing that affects the passions of persons is the state of weather, especially those of a nervous disposition.

Brainstorms are brought on by atmospheric tempests due to the electric stimulation of the highly charged air. A high spirited horse frequently tries to run away just before a storm. The school children, and sometimes the teacher if she does not possess the power of self-control, becomes nervous and the whole school disorganized. The manometer will show at these times that the arterial pressure has risen to the stage of nervous irritation.

In states of high nervous tension we are very much alive, figuratively speaking, the blood stream becomes more concentrated and rich in globules, which are utilized instantaneously in the tissues. Combustion goes on more rapidly and sensibility is considerably excited.

During this state of hypertension we use up our vital forces very rapidly and there is a rapid accumulation of waste products in the tissues causing fatigue. This high blood pressure and the rapid combustion going on in the

tissues call forth the carbohydrates stored therein, the liver gives up its glycogen which is transmuted into sugar to be used for body fuel. This is why we find sugar in the blood and the urine in excessive quantities after great fright or anger. There is also an increased secretion of adrenalin which constricts the arterioles and wards off exhaustion as long as possible. This is why we can perform feats requiring great strength during intense excitement which we could not do under normal conditions.

Artificial stimulants and drugs that raise and lower the arterial pressure will produce all the different phases of passions as shown by the manometer.

The table showing the range of arterial pressure and its bearings upon the mental states is true in the average individual, yet some cases may be found where a person with an arterial pressure of 240 is only angry. This is due to the elasticity of the arterial system which will relax to accommodate greater pressure in some individuals than others. People suffering with arterial sclerosis and cirrhosis of the liver cannot accommodate the various degrees of blood pressure as well as normal individuals. For this reason this class of individuals suffer from paralytic shocks very frequently under excitement or anything that causes a raise in their arterial pressure.

The liver is a good reservoir for the accommodation of high blood pressure. If we pal-

pate the liver under high blood tension we will find this organ very much distended and percussion dullness will extend from two to three inches past the normal limit.

We can raise the blood pressure and distend the liver by rythmic tapping about 40 times per minute on the spine of the seventh cervical vertebra. By percussion on the tenth dorsal spine we may lower the blood pressure and contract the liver.

In low states of blood pressure on the venous side the portal circulation becomes sluggish, the liver distended, thus causing a backing up of the venous circulation in all the chylopeptic viscera, the patient suffers with catarrh of the bowels, hemorrhoids; if a female with uterine troubles which in turn cause reflex neurosis, via the pneumogastric and sympathetic nervous system to the brain and all the organs of the chest and viscera. These patients are sad and dejected hypochondriacs.

Females at the period of puberty, at each menstrual period and at the menopause suffer from high arterial pressure. For this reason they are highly nervous and excitable at these times.

If our arterial blood pressure is too high we are in great danger of acting abnormally and should take some treatment that will lower the blood pressure. Crimes might have been prevented had such treatment been given to some individuals suffering from abnormal blood pressure.

On the other hand if we are hopeless and apathetic and our blood pressure falls below 70, which shows itself in a lack of interest in our surroundings, we may require stimulants to restore the normal pressure.

Weak and irresolute persons suffering from lowered blood pressure have an accumulation of toxins in the system due to faulty metabolism from this cause, and are subject to fits of violence due to the irritation of these toxins which excites the nerves of sensibility the same as we can produce anger experimental by alcohol, caffeine, and strychnine, or by mechanical stimulation of the ends of sensitive nerves with the hot bath and hair-glove.

Fermenting food in the stomach will irritate the nerve ends and produce excitement or anger.

If these stimulations are moderate and methodical instead of excessive, the mind may be attuned to gladness in life and love of work.

Self control is the mark of real humans. Those who do not possess it are little above the brute. Be a master of your passions, learn to subdue them, do not allow them to master you or they will lead you through bog and fen and foul morasses and possibly land you in a felon's cell. Many great men have almost mastered the whole world but failed because they could not master their own passions. Exercise self-control, and keep your blood pressure in the zone of smiles and delight, never allow yourself to be driven to anger, much less to fury.

High blood pressure showing itself in the flushed face, plethora, trip hammer pulse and arteries that feel hard to the touch may be due to hypertrophy of the heart, cirrhosis of the liver, or kidney disease, and need the most critical attention.

However, these conditions are usually brought about by over-indulgence, by a lack of self-control and by overeating and underworking. Flat feet are usually caused by flat heads.

The normal man lives a natural life and don't get rheumatism. Damaged men like damaged goods must go to the bargain counter. Up-to-date employment agents pay more attention to your physical appearance than to your recommendations. Your old rum soaked, smoked up carcass won't bring much. The future employer will require you to stand medical inspection.

Disease comes only to those who have been preparing for it. It is a sequence postponed by nature as long as she can, and then, discouraged, she says let her go back to the melting pot.

People who dread disease have disease already. The best receipt for health is keep busy, happy, and contented. Do not overeat. Do not overwork. Do not underbreathe. Be temperate in all things. As many people die from overeating as from drink, the only difference being that when they overeat they kill only themselves.

Diogenes once collared a young man whom he caught going to a feast, took him home and ordered his parents to lock him up until his sanity returned. Diogenes knew that the midnight supper spelled disease, disintegration, and death.

If you have the coffee, meat, and pancake breakfast habit, cut it out, or you will soon be a candidate for the ether cone.

Those who are given to the luxuries of the table are preparing themselves for the banquet of the graveworms.

Think health, preach health, and let your life be one grand sweet song so that when your summons comes to leave this mortal state, you go not like the quarry slave at night scourged to his dungeon, but like the Arab who folds his tent at eventide and silently steals away.

Bacteriology

The internal secretory system while kept up by a flow of good rich blood to the glands in turn play a very important role in physiological chemistry. They act in harmony, and one cannot be removed without affecting the entire physiological chain that carries on the chemistry of life.

For instance, the secretion of the pitnitary activates the thyroid. The secretion of the thyroid activates the spleen, adrenals, ovaries, intestines and pancreas. The adrenal secretion activates the ovaries and kidneys, and also inhibits the thyroid. The pancreas activate the liver, adrenals, and thyroid.

Instead of giving the glandular extracts separately, I make a combination of the secretions which I give with the hypo once per week in combination with my hæmatone.

This combination given by this method is taken up by the circulation and activates all the glands temporarily, after which nature will continue.

The action of the internal secretions is zymotic.

Digestion is carried on by the enzymes, and is a reconstructive process.

Fermentation and putrifaction are destructive processes carried on by microbes.

The two processes cannot be carried on in the same organism simutaneously. This is why infection, or microbic action, interferes with the chemistry of life. The fermentation test for bacteria in lactose peptone broth is based upon the gas formed by the action of the bacteria on the ferments. This test is accepted by all bacteriologists and proves my theory.

One process must inevitably counteract the other.

Rational living, eating and sleeping throws the balance of power on the side of the enzymes.

Ferments decompose complex organic material into simple compounds by the agency of either protoplasm itself, or of a secretion prepared by it.

The bile, when normally secreted by the liver, emulsifies fats, stimulates peristaltic action, is antiseptic and alkaline, which is necessary to the action of the enzymes of the pancreas.

The toxins produced by microbes are acid and irritating. They inhibit or destroy entirely the zymotic action of the internal secretions, thus interfering with all the vital processes and lowering resistance.

This is why the bacillus Bulgaricus or the yeast ferment are valuable in auto-intoxication, the excessive ferment action predominates over the toxins. I frequently prescribe Fleischman's Yeast in chronic constipation and auto-intoxication with wonderful results.

We have within our bodies the glandular system, nature's physiological laboratory, which prepares from the blood the substance which will render us immune to all disease if we give nature a chance and assist her by rational living.

When the glandular system performs its function normally, bacteria cannot propagate in the body, at least to such an extent to be harmful.

Blackheads are coagulated oily secretion in the glands of the skin. They form a fertile spot for the propagation of germs. An infected blackhead becomes a pimple which is the forerunner of a boil, when the proper germs are present.

The boil burrows deep into the tissues and infects the blood stream, which is followed by crops of boils; thus we see a boil starts from the surface instead of the inside as many people think.

When the air cells of the lungs become occluded with cheesy substance, namely, tubercles, they form a fertile spot for the propagation of tubercular germs which are present at all times in the air we breathe.

Some physicians claim rheumatism is caused by uric acid and others by infection. Both are right.

The person with a gouty diathesis develops rheumatism when subjected to infection which breaks down his resistance and interferes with glandular activity, and thus prevents the

proper elimination of the urates, with an accumulation in the fluids of the body setting up an irritation of the synovial and serous membranes.

This lessened alkalinity of the blood, due to an accumulation of acids and toxic products, dissolves out the alkaline cell salts from the cartilages and they become spongy and inflamed. The lymphoid structures become œdematous, congested, and susceptible to infection.

The tonsils when enlarged and inflamed become infected by the germs which are ever present in the throat.

The gums bleeding and spongy recede from the teeth, forming pockets where pus germs accumulate, and we call the condition pyorrhœa.

The surgeon who cuts out the tonsils and pulls the teeth, unless they be past medical aid, is treating effects instead of causes, and the condition will return.

Mrs. L. brought her little boy to my office today, tonsils and adenoids were removed two years ago. His condition now is as bad as before the operation.

Mrs. K. came to me a few days ago; had gall bladder drained six months previous; pyorrhœa present; suffering from bracheal neuritis. The gall bladder trouble is worse than before the operation.

I specialize largely on rheumatism, and have hundreds of case records like above to prove

that these troubles return unless the cause is removed.

I have come to the conclusion that the liver is the cause of 75 per cent of the cases of rheumatism, either directly or indirectly.

Ulcerated tonsils, buboes, or pulmonary tubercles, are constitutional troubles, due to the same process, differing only in location and manner of infection.

In my treatment of these diseases, I regulate the diet, treat the blood by direct method, and let nature do the rest. Germs never can and never have lived in normal blood.

A natural prophylaxis is produced in the body by the enzymes. The enzymes are dual bodies; one portion is soluble, non-diffusible, and destructive by heat. It is of a proteid nature. The other part is soluble in alcohol, diffusible, and may be boiled without losing its activity. This proves it is mineral in nature and composed of the tissue salts.

Sanitary science has done more to decrease the death rate from infections and contagious diseases than has therapeutics.

Some will say if germs are not the cause of disease what is the use of sanitation? Until we learn to live rational lives in accordance with the laws of health, we will have lowered vitality.

Every person with lowered vitality is predisposed to infection which is a secondary complication in any disease.

Microbes are found in and complicate diseased conditions of the organism; they are

seldom, if ever, the cause of disease primarily.

With three intravenous injections of the tissue salts as per my general formula, I have increased the red blood corpuscles from 3,000,000 to 4,640,000, and the hæmoglobin from 54 to 81 per cent.

This was in a third stage case of tuberculosis, the weight increased and the bacilli disappeared from the sputum. I believe that if we can maintain this blood standard we can cure most of our tubercular cases, or our physiological teaching needs to be corrected.

Pathogenic germs lose their virulence in the last stages of a disease even in the same individual.

Pneumonia is only a manifestation of a local infection of the organism by the diplococcus of Fränkel. It may be found in the throat of 40 per cent of healthy people. The prognosis of the infection is governed by the tissues in which it is developed. In one person it causes pleurisy, in another endocarditis or pericarditis, and again it causes otitis, peritonitis or arthritis. Bacteriological investigation has proven this. Creosote and calcium are the indicated remedies in these conditions.

The central group of molecules in the cell protoplasm is composed of the tissue salts. These elements are positive and produce the side chains which bind various materials, such as food, toxins, etc. These chains are termed receptors, and the substances which they bind are termed heptaphores. The toxins also con-

tain a second or toxophore group. These toxophores set up an irritation in the cells causing them to throw into the circulation their receptors which act as antitoxins and are named haptines.

After the cell has thrown off its receptors, or in other words precipitated some of its tissue salts, it must be supplied with more to meet the deficiency.

These free receptors combine with toxins and neutralize them. These receptors in the serum of an immunized animal are what render it valuable as an antitoxin.

Certain body cells, animal secretions, and bacteria act as anti-bodies in the blood. They have a destructive action on cells similar to themselves. This is the case when certain anti-bodies in the blood neutralize the potassium and calcium salts in the red blood cell, dissolving out the hæmoglobin and causing hæmolysis. This is the cause of chlorosis and anæmia.

The tissue salts, if present in the blood serum, will act as or form antihæmolysins in the blood, thus saving the red cell and giving it more resistance.

In the propagation of all pus organisms, calcium is consumed, and as this salt maintains the integrity of the cell a deficiency in it is followed by all the other cell salts with the chain of pathological conditions that follow.

Cast off cell receptors furnish agglutinin, the action of which is described in the Widal Re-

action which is a clumping of bacteria with a loss of motility.

Most bacteria are composed of negative substances, therefore the cell salts which are positive will unite with them, destroying them or rendering them harmless. Some bacteria are not killed until taken up by the leukocytes.

The degree of phagocytosis is what determines the Opsonic Index of the blood. If tubercle bacilli sensitized by the blood are taken up by the leukocytes, on an average of three to each leukocyte, and bacilli from the same emulsion sensitized by normal blood are taken up on an average of five to the leukocyte, the Opsonic Index of the blood is 3/5 of 1 or .60. The Opsonic Index of the blood depends upon the potassium, sodium and magnesium in the white cell, as these cell salts maintain the integrity of the cell and greatlv increase the Opsonic Index of the blood. In the third stage of tuberculosis with a mixed infection and leukocytosis of 2,500 per c.c. with four injections of the tissue salts I have cured the infection, and as a result the blood count dropped to 10,000 per c.c. in three weeks' time. At the same time there was an increase in the red cells. This is conclusive evidence that the cell salts act as a physiological antitoxin with absolutely no ill effects on the system. If scientists would do a little rational experimental work, using nature's remedies to build up synthetic antitoxins instead of boiling up dead germs in the laboratory, the dawn of a

new era would soon be ushered in, where the physician could cure his infectious cases which would be much more pleasant and profitable than signing death certificates.

A lady patient who had been suffering with crops of boils for over two years, was cured without recurrence with one intravenous injection of the general formula composed of calcium creosote and other tissue salts. She had five boils at the time of the injection and they disappeared within twenty-four hours.

This is only one of the many cases of streptococci infection that I have cured with this treatment.

A synthetic antitoxin of chemical origin, that will neutralize the toxins and raise the vitality, is the most rational. This is the action of a harmonious solution of the tissue salts. Serums have destroyed more lives than the diseases would have done if allowed to have run their course. Before the advent of the serum therapy, scarlet fever and diphtheria were equally destructive to life. While we have no serum for scarlet fever, the death rate has decreased as much in this disease as it has in diphtheria. We have acquired a natural immunity for these diseases which has had more to do with the decrease in mortality than the treatment of same.

In the pathogenesis of all infectious diseases, we have a lowered vitality. The best germicide is pure rich blood containing the cell salts which give it vital, chemical, and physiological activity.

When vitality is low, we are predisposed to infection. In cold climates during the winter months when people are shut up in ill ventilated tenement houses, using stoves and furnace heat which consumes the oxygen and throws off carbon dioxide gas, the vitality is lowered, which accounts for the increase of infectious diseases during these months. Germs differ in their characteristics as much as animals. Some are more virulent than others. Germs like the pneumococci multiply rapidly, throw off as a consequence more toxins, hence the disease runs a rapid course.

Serums of germ origin will never prove beneficial, except in this type of disease that run a rapid course.

When bacteria are sensitized and sterilized in the laboratory it is my impression that all we get is a protein of animal origin.

These proteins cause quite a reaction in the organism and the beneficial results obtained from them are due to this reaction.

I have found in my experimental work that I get the same raction from vegetble proteins.

For instance, in hay fever, I have taken the flowering tops of the Rag weed and the Golden Rod, boiled them in a test tube, strained this solution and potentized it to the one-hundredth or 2X strength with equal parts of alcohol and distilled water, and then took 2 c.c. of this solution and added it to 8 c.c. of my Hæmatone, and injected same intravenously in hay fever cases with very good results. However, I

would frequently get a reaction from this treatment.

I have also taken fifteen drops of the patient's blood from the medium basilic vein, mixed it with 10 c.c. of distilled water, after which I hæmolized it for twenty-four hours at 32 degrees Centigrade. Next I sterilized by boiling and then added 10 c.c. of distilled water and filtered.

I added 3 c.c. of this solution to 6 c.c. of my Hæmatone and injected same into the vein and got considerable reaction such as a rise of temperature, rigors, movement of the bowels, which passed off in about half an hour and the patient improved.

I have had some very good results from this method of treatment.

If the serum is not boiled and given with the hypodermic same dosage, I get very little reaction.

I have also experimented with the vegetable proteids such as alfalfa, flax, millet, mustard, and clover seed, and many others which I do not recall.

I prepared them by boiling the ground meal of these seeds in a solution of dilute hydrochloric acid 6 per cent, after which I filtered and neutralized with either a sodium or a calcium salt, preferably sodium hydroxide. This solution should be potentized to about 3 per cent, protein solution with distilled water. You cannot use alcohol in making up these protein solutions.

I have also combined the proteins and enzymes, which I have named Protozyme, which I use in conjunction with my intravenous solutions.

If you have your protein solution perfectly hydrolized you will get very little, if any, reaction. Using alcohol, or getting your solution too alkaline, prevents the breaking up of the protein molecule.

This protein serum should be given with the hypodermic and dosage not to exceed six to ten minims, using the technique for hypodermic medication in general. The use of the vegetable proteins should be continued for several weeks, if necessary, and given every third day.

I have had very good results in anæmic, rheumatic conditions, tuberculosis, and all chronic diseases.

I have had the best results from the protein found in alfalfa meal. However you may make a study of the plants which have medicinal properties and experiment along these lines with results not yet attained by me. Keep your protein solutions in glass stoppered bottles. I have given you these few pointers for your investigation and meditation, so that you may learn that there are other things under the sun that will produce an anaphylaxis and prophylaxis besides dead germ soup.

I have advanced the theory for the past twelve years that pyogenic germs live in, and are carried from, one organ of the body to another by the blood. This has been lately proven on the battlefields of Europe.

I recently had a case of tonsilitis that developed an acute case of nephritis.

Another case of a patient who complained of excessive fatigue all the time without other symptoms. The blood of this patient showed that the pneumococci were present in the blood stream. This patient never had pneumonia. We also have our typhoid carriers who themselves seem perfectly healthy.

According to standard analysis of milk, water and various foods a small number of bacteria to the c.c. is not considered pathogenic. As bacteria propagate by self-division once or twice per minute were it not for the normal resistance of the organism one bacteria would be just as pathogenic as a thousand.

If we are all susceptible to infection, why do we quarantine the patient and allow the physician to go from house to house, visiting sick patients? It seems to me that he is a regular germ peddler.

Diet and Hygiene

All reforms that have moved the world since the dawn of civilization have sprung from the undying yearning of the human race for an ideal state of existence, where all might live in harmony and peace.

In the traditions of all nations or peoples we find the myth of some form of a lost paradise, where man once lived free from disease and in perfect happiness and ease, and through all the ages man has been seeking to regain that lost paradise.

Yet, in spite of all our efforts and struggles to reach that state, we seem to be as far as ever from the desired goal. War, murder, poverty, disease, and gluttony still hold sway in human society.

Commercialism is absorbing the life blood of all nations and is the cause of all wars, including the present great war in Europe.

We still allow poisons and stimulants to be sold which pervert the morals of our fellow beings, and necessitate the keeping up of jails, poor-houses, hospitals, and lunatic asylums.

Very few people die a natural death. I will venture to say that 95 per cent of the human race commit suicide by unnatural living.

As tradition has it, no doubt there was a time when man lived to be several hundred years old, when he lived a more natural life, for it is easy to see that disease, poverty, and immorality are promoted by the false system of society under which we live more than they would be in the savage tribes.

Diet reform will have a great deal to do with the mental and physical generation of the individual, and the food question in the past has had considerable influence over the progress and wanderings of the human race.

This is the age of efficiency, and there is no doubt that man can greatly increase his mental and physical efficiency by proper selection of food.

The transmutation of food into physical energy is a process common to animals, but man should be able to select his food so as to derive the greatest energy with the least bodily effort and expense of his physical well-being.

Geology divides the periods in which the earth's surface was forming into primary, secondary, tertiary, and quarternary.

The fossil forms of animals and plants in the different strata of rocks show an almost uninterrupted gradation from the lowest to the highest forms of organic life, according to the time in which these changes were taking place on the earth's surface.

All life originated in water, which in the primordial age almost covered the surface of

the earth. The lowest animal forms were nourished by the lowest plant forms. The monsters of the carboniferous period by the coarse and luxuriant vegetation which composes the coal beds, while the higher orders of plant life especially the fruit trees, belong to the era of man and his progenitors, and the fact that we find no flower-bearing plants and fruit trees in the fossil state clearly demonstrates their recent origin simultaneously with that of man.

It is evident that the food of all animals was originally derived from the vegetable kingdom, and that no animals were originally carnivorous, but the evolution of this class of animals was brought about by the scarcity of plant food in a later geological period, at which time man also was forced for the same reason to become a flesh eater.

Man's digestive organs were formed during the fruit eating period and have not changed materially since that time.

It was not evolution that changed man from a fruit eating animal, but cataclysm which changed his food from fruit to flesh with "made dishes" to keep him from starvation.

Geological researches have traced man's ancestry back to the tertiary period. For thousands of years he subsisted on a fruit diet, up to the time of the glacial period, about thirty thousand years ago, after which the earth's surface and climate changed, making it necessary for him to migrate and change his diet.

Mankind was homogenous before the age of ice, and the separation into distinct races took place during the migration of the glacial period.

The finding of fossil remains of tropical animals in the arctic zones proves that before the glacial period a uniform warm climate existed over the entire surface of the earth.

In such a climate of eternal spring, primæval man lived for thousands of years, and the tropical forests furnished bread-fruit, dates, bananas, nuts, and all the necessaries of life in abundance.

There was no need for inventing tools, or fire, and waging war to sustain life, or exploit his fellow beings.

The age of snow and ice during the glacial period drove man from his Eden along the shores of the Mediterranean and the West coast of the Pacific ocean, also up into Western Europe, where he met with the cave lion, mammoth, bears, and other wild animals, making it necessary for him to use his arms and hands, and to develop his ingenuity and brain, in defending himself against these monsters of the forests.

During this period, man invented fire for cooking and warmth, as well as to preserve his food. He also invented weapons from stones and bones of animals, and he gradually became a hunter.

Having become a hunter, it was only a short step to become a warrior, especially

when a shortage in food forced the different tribes to contest for the spoils of the chase.

The supreme intelligence that created the universe did not ordain that man should devour his fellow beings for sustainance, a practice which lowers his character and puts him on a level with the beasts of prey.

Shortage of flesh foods and necessity soon taught man the secrets of agriculture, and when this industry began to develop, culture and the awakening of man's higher intellectual and moral faculties began to develop also.

Therefore, it is in the temperate zones where man has to till the soil and plant fruit trees to sustain life that he is more progressive and prolific and that his sense of the beautiful, the basis of the arts and sciences is best developed.

Nature drove our primitive ancestors from the tropical fields and compelled them to earn their bread by the sweat of their brow. In ignorance and want, man left his early paradise; through knowledge and industry, he will regain it, and with the achievements of art and science, he will make it far happier than that of Eden.

Through war, hardships, and sufferings we reach the crowning heights of mental and moral perfection, leading us onward and upward to higher forms of life and civilization.

Having induced you to see what man's natural diet is composed of, we will take up the chemical composition of food materials.

The study of the chemistry of food is in its infancy—fifty years ago nobody knew anything about the subject.

Modern physiology teaches us that we need food to build and repair the various tissues of the body and to supply it with heat and energy.

WATER, composed of hydrogen and oxygen forms 60 per cent of the body weight.

PROTEIN, composed of hydrogen, nitrogen, carbon, sulphur, and phosphorus forms 18 per cent of the body weight.

FATS, composed of hydrogen, oxygen. and carbon, form 15 per cent of the body weight.

Carbohydrates contain the same chemical as the fats, only in a less concentrated form. They exist in nearly all plant foods, especially the cereals and in the sugar of sweet fruits.

Protein is chiefly found in nuts, the white of eggs, and it forms the casein in milk and gluten in wheat.

Protein is required to repair and build up the cells of the body, while carbohydrates are needed to keep up bodily temperature as well as muscular activity and should compose the chief part of the bill of fare.

For the daily nourishment of the average man, about fourteen ounces of fat and carbohydrates, and about one ounce of protein, are necessary.

The MINERAL elements, chiefly the five tissue salts, compose about 5 to 6 per cent of the body weight, but without which the

chemistry of life cannot be carried on and without which exosmosis and endosmosis is impossible.

It has been demonstrated that an animal fed on food with the tissue salts extracted, dies as quick as it would from starvation.

The chemistry of life is carried on by a process of electrolysis going on in millions of invisible batteries, by the play of electrically charged molecules, whose negative and positive effects depend upon the presence of the tissue salts.

These tissue salts, in order to perform their function properly, must be in the organic form, having passed through the vegetable.

Normally, these foods are decomposed in the alimentary canal by digestion, which differs greatly from fermentation and putrefaction.

Digestion is a vitalizing process which supplies material for new organic structure, while fermentation and putrefaction are destructive processes carried on by microbes, which reduce the organic compounds into inorganic substances.

When foods ferment in the alimentary tract this is what takes place, thus rendering them not only useless, but toxic.

Food must contain some bulk of indigestible substances to bring about mechanical activity in the intestines so that the bowels move normally.

The following shows the chemical analysis of some of the principal foods:

COMPOSITION OF FOOD PRODUCTS

FOOD MATERIALS (Average)	Water Per Cent	Protein Per Cent	Fat Per Cent	Carbohydrates Per Cent	Mineral Matter Per Cent	Fuel Value Per Pound In Calories
Bananas	77.1	1.6	0.3	20.2	0.8	380
Grapes	79.4	0.6	0.5	19.0	0.5	360
Oranges	86.2	1.5	0.2	11.4	0.7	225
Olives	67.0	2.5	22.7	3.4	4.4	810
Apples	84.5	0.5	0.5	14.0	0.5	230
Pears	81.0	1.0	0.5	17.0	0.5	325
Peaches	86.4	0.6	.....	12.5	0.5	225
Raspberries	86.4	0.6	.....	11.7	0.4	240
Water Melons	92.1	0.9	0.1	6.6	0.3	135
Strawberries	90.4	1.0	0.6	7.4	0.6	180
Dried Prunes	29.2	2.5	0.6	65.0	2.7	1170
Dried Raisins	28.5	4.5	0.6	63.2	3.2	1200
Dried Dates	38.2	3.0	0.4	57.0	1.4	1140
Dried Figs	27.7	4.3	0.7	71.0	1.3	1395
Sugar, refined	.....	.....	.....	100.0	.....	1750
Almonds	4.8	21.0	54.9	17.3	2.0	3030
Brazil Nuts	5.3	17.0	66.8	7.0	3.9	3329
Filberts	3.7	15.6	65.3	13.0	2.4	3432
Hickory Nuts	3.7	15.4	67.4	11.4	2.1	3495
Pecans	3.0	11.0	71.2	13.3	1.5	3633
Walnuts	2.5	27.6	56.3	11.7	1.9	3105
Butternuts	4.5	27.9	61.2	3.4	3.0	3371
Pine Nuts (Pignolias)	3.4	14.6	61.9	17.3	2.8	3364
Cocoanuts	14.1	5.7	50.6	27.9	1.7	2986
Cocoanut Milk	91.2	0.5	0.1	7.0	1.2	150
Peanuts, raw	4.9	32.6	47.3	12.5	2.6	2735
Chestnuts, dried	5.9	10.7	7.0	74.2	2.2	1875
Beefsteak	54.0	16.5	16.1	.....	0.9	975
Halibut Steak	61.9	15.3	4.4	.....	0.9	475
Eggs	65.5	13.1	9.3	.....	0.9	635
Cow's Milk	87.0	3.3	4.0	5.0	0.7	310
Cream Cheese	34.2	25.9	33.7	2.4	3.8	1885
Butter	11.0	1.0	85.0	.....	3.0	3410

Composition of Food Products—Cont'd

FOOD MATERIALS (Average)	Water Per Cent	Protein Per Cent	Fat Per Cent	Carbo-hydrates Per Cent	Mineral Matter Per Cent	Fuel Value Per Pound In Calories
Dried Peas	9.5	24.6	1.0	62.0	2.9	1665
Dried Beans	12.6	22.5	1.8	59.6	3.5	1620
Dried Lentils	11.6	26.0	1.0	59.0	2.4	1620
Oatmeal	15.8	14.0	6.0	62.0	2.2	1800
Cornmeal	12.5	9.2	1.9	75.4	1.0	1635
Whole Wheat	10.1	14.0	2.2	71.9	1.8	1650
White Flour	14.2	9.2	1.0	75.1	0.5	1635
Rice	13.2	8.0	0.8	77.0	1.0	1650
Rice, peeled and polished	14.3	7.0	0.3	78.0	0.4	1600
Potatoes	75.1	2.6	0.3	17.8	1.5	350
Tomatoes	94.3	0.9	0.4	3.3	0.6	100
Cabbage	91.5	1.6	0.3	5.6	1.0	145
Spinach	88.5	3.5	0.6	5.3	2.1	160

The mineral matter in food represents the tissue salts. The following is the United States Government analysis of the ash in the banana; Silica 2.19%, Lime 1.82%, Iron Oxide 0.18%, Phosphoric Acid 7.68%, Magnesia 6.45%, Soda 15.11%, Potash, 43.55%, Sulphur 3.26%, Chlorine 7.23%. The ripe banana is a staple article of food and many native tribes almost subsist on them.

PURIN-FREE DIET is indicated in chronic and irregular gout, chronic rheumatism, periodic headaches, migraine, asthma, bilious attacks, epilepsy, catarrh, neurasthenia.

Purin-rich.—Sweetbread, liver, beef, pork, mutton, chicken, veal, salmon, halibut.

Purin-Poor.—Potatoes, onions, oatmeal, turnips, carrots, parsnips, asparagus, rhubarb, spinach, dates, figs, codfish, tea, coffee, cocoa, malt liquors.

Purin-free.—Milk, eggs, cheese, butter, sugar, white bread, rice, tapioca, cabbage, cauliflower, lettuce, macaroni, strawberries, wines, spirits.

SALT-FREE DIET.—A chronic inflamed kidney cannot freely excrete salt, which is therefore retained in the body. Water is also retained and dropsy results. Salt-free diet reduces salt percentage in the blood; salt stored in dropsical effusion is drawn upon to make good deficiency in the blood and dropsy subsides. Especially indicated in chronic parenchymatous nephritis, cardiac dropsy, cirrhosis of liver.

Amount of salt per 1,000 parts in:

	Grams		Grams
Bread	8-10	Peas	0.6
Sea Fish	5.4	Meat	0.3-1.0
Milk	1.5-2.5	Potatoes	0.5
Eggs	1.6	Fresh-water Fish	0.48
Lentils	2.3	Fruit	.03-0.2
Fresh Butter	1.0	Rice	0.02

Allow egg, bread without salt, butter without salt, tea, coffee, milk, chicken, fresh water fish, potato, jelly, custard. Forbid any salt to be added to diet.

MINERAL CONSTITUENTS OF THE FOOD

Amount of mineral ingredients of diet needed per day:

Phosphoric acid.....3-4	Calcium oxide.....0.7-1
Sulphuric acid 2-3½	Magnesium oxide ..0.3-0.5
Potassium oxide 2-3	Chlorine 6-8
Sodium 4-6	Iron 0-006

Infants require about five grains calcium daily.

Milk contains one and a half grams of calcium in each liter.

Eggs, cereals, rice radishes, asparagus and spinach are rich in calcium.

Foods richest in iron are spinach, yolk of egg, beef, apples, lentils, strawberries, white beans, peas, potatoes, wheat and oatmeal.

Animal foods are rich in sodium, vegetable foods rich in potassium.

PURIN-RICH FOODS.—To be avoided in epilepsy: Salmon, halibut plaice, beef, pork, mutton, chicken, veal, liver and sweetbreads.

If the patient shows loss of weight under a purin-free dietary, it is advisable to give fish, or even lamb or mutton.

Migraine is caused by the accumulation of toxic wastes, probably of the purin group, in the blood. It corresponds with epilepsy in its pathogenesis and symptomatology according to Sajous.

The accumulation may be hastened by indiscretion in diet, excess of food, midnight sup-

pers, etc. Excessive muscular fatigue causing an accumulation of toxic wastes too fast for the blood to dispose of may be an occasional cause. There may be reflex causes also from eye-strain or uterine disorders.

There is a true relationship between migraine, epilepsy, and neuralgia.

Dietetic treatment is the same as in epilepsy. Coffee and tea should be avoided, but water should be taken freely in large quantities and saline eliminants occasionally. Analgesics may be used with discretion. Thorough cleansing of the bowels to remove toxic material, and the administration of two teaspoonfuls of effervescent sodium phosphate before meals are the most rational measures in addition to the intravenous treatment with Hæmatone.

Neuralgia.—Treatment same as for migraine.

Rheumatism and the Uric Acid Diathesis.—Rheumatism is essentially a dietetic disease and is curable by a well-balanced ration, curtailment of proteids and by augmenting the digestive powers. A milk diet should be resorted to in an acute stage of the attack. No red meats should be indulged in, and all articles containing sugar should be reduced to a minimum. Saterlee says that the chief vital factor is proteid metabolism. A purin-free dietary should be adhered to as much as possible. A hypodermic dose of my Protozymes, once per week, will be of value in these cases.

CHRONIC SKIN DISEASES.—It has been long recognized that a faulty metabolism and

many chronic skin diseases, such as acne, eczema, and psoriasis, go hand in hand. It is declared, that while all cases of eczema are by no means of gouty nature, it appears that the eruption is at least favored by the conditions of metabolism belonging to gout.

A number of other skin diseases have been pretty definitely associated with gout, but the connection is not always as clear as in eczema. Psoriasis and the rheumatic diathesis are now generally associated, and it is thought that acne vulgaris is in some measure also characterized by a diminished alkalinity of the blood. A purin-free diet is to be recommended in these conditions, paying special attention to the nourishing virtues of the green vegetables.

CHOREA is a rheumatic disease—an acid irritant being the cause in both cases. The dietetic measures advocated in epilepsy and rheumatism are indicated in chorea.

ANÆMIA.—The most common cause of anæmia is a dietary deficient in iron. In the cases where the anæmia is due to some poison causing destruction of the red blood cells, food, no matter how rich in iron it may be, will of necessity prove valueless.

In the commoner cases of anæmia a generous diet of beef, eggs, spinach, asparagus, and fruit, especially apples, will of themselves, provided the patient's digestive powers are normal, tend to promote recovery. Unfortunately, after a prolonged period of malnutrition the digestive powers are usually left much below normal.

In CHLOROSIS follow the same treatment as for anæmia, paying strict attention to the condition of the bowels in both cases.

LOSS OF WEIGHT, resulting from poor nutrition, be the origin definite or obscure.

LOSS OF APPETITE is nature's indication of enzyme deficiency, as a good appetite and vigorous digestive secretions go together. Pavlov says, "Where there is no appetite the digestive juice is absent." We may say where the digestive juices are absent there is no appetite. Appetite is the strongest of all stimuli to the digestive glands, hence restoration of appetite of itself favors the return of normal digestive conditions.

As the activator in the enzymes is composed of the tissue salts an intravenous injection of my Hæmatone every third day for six treatments stimulates the internal secretions of all the glands restoring normal metabolism in the system.

In closing this chapter on Diet, I must say that I have studied the Diet question from a scientific standpoint for a number of years. I have observed people who have grown to a ripe old age and inquired into their diet and in many instances found them to be people that paid very little attention to what they ate.

I have taken rheumatic cases which had been placed on a limited diet and physic given until they were hardly able to walk, and placed them on a rational diet giving them a laxative only when necessary and cured the patient

where the other physician failed. The only treatment I gave these patients was my rheumatic solution of the tissue salts.

The greatest difficulty experienced in outlining a specific diet for an individual is that the diet indicated in a certain disease does not always agree with the individual.

There are no two individuals in the universe exactly alike. Each organism has its peculiarities and idiosyncrasies and that is why we have no specifics in medicine. The old adage, "One man's food is the other man's poison," is true.

If the individual has not intelligence enough to know what agrees with him, no one can tell him.

An individual or a race of people seem to become accustomed to a certain diet. For instance, we have the German eating his cabbage, the Irish eating potatoes and buttermilk, the Italian eating spaghetti, the Turk eating his dates and datemeal, the Yellow races eating rice—all subsisting on an entirely different food and seem healthy and happy, but if you change their diet, they get sick.

It is not so much a question of what we eat, as how much we eat. Overeating kills more people than drinking, in fact alcohol has a tendency to prevent auto-intoxication, the main trouble it causes an abnormal appetite, and we eat too much.

In my case records of patients I have treated for Bright's Disease, forty out of fifty were

total abstainers, but all were excessive eaters.

Numerous laws have been passed to protect the people against impure foods, but regardless of all this, foods are less pure today than they were fifty years ago.

Our forefathers were not as well versed in synthetic chemistry as we are and did not understand food adulteration.

We have advanced so far along the lines of synthetic chemistry, we have become experts in making articles synthetically and adulterating many articles of food.

We have privately owned cold storage plants where they hold eggs and meat for months and even years, until the prices suit monopolists.

They smoke the meat over night instead of the old process of our fathers. They freeze tough old animals for months in cold storage plants, until the meat is as tender as spring lamb, but in this process purin basic poisons are formed which affect the health of the consumer.

Bakers use milk and egg powder in cake making instead of the real article.

Perhaps the time will soon come when government ownership of the slaughter house and cold storage plants will overcome these difficulties. In the meantime we will have to get along as best we can under congested conditions in large cities, or follow the slogan, "Back to the soil."

Don't believe everything you read on the Sign Boards, in fact it is good practice to avoid

the extensively advertised articles as the consumer pays for the advertising.

When thirsty drink what the birds drink.

When hungry, eat the fruit of the forest and products of the soil.

Study nature and follow her immutable laws. Fix your gaze upon the stars, expand your chest and inhale the God given ozone to stimulate vital activity, making your blood a fountain of life, carrying health and vigor to every organ of the body.

Mental Science

Mental science is practiced by diverse methods and under various names such as Christian Science, Suggestive Therapeutics, Auto-Suggestion, Divine Healers, Physicians, and many other cults too numerous to mention.

Whatever you have a mind to call it, in sum and substance the underlying principle of all these methods of healing is Mental Science, or the effect the mind or brain exercises over the organism, and of which you get a pretty good idea of the way it effects the body for good or ill, in my chapter on blood pressure in this book.

The organism is continually under the influence of the mind and is being affected by the same especially during all our waking hours. The only time the objective mind releases its control over the body is during sleep which is ushered in with a general relaxation of the muscles of the body, bringing about a free and unobstructed circulation of the blood.

The pores of the skin as well as the liver, kidneys, and ductless glands of the body perform their functions properly during sleep. This is the main reason why we recuperate so rapidly while asleep. Sleep, nature's balmy restorer that knits the ragged sleeve of care. Sleep is more potent in its influence over phy-

sical well being than all the doctors and mental healers in the world, without which in a very short time the human race would become a band of raving maniacs.

Sleep spells relaxation; relaxation is absolutely necessary at least for eight hours out of every twenty-four, in order that we may enjoy perfect health.

Relaxation is the end sought by all systems of healing, whether it be Christian Science, Osteopathy, Chiropractic, Suggestive Therapeutics, doping the patient with opiates or bromides, taking a trip to the mountains or the seaside, playing golf and other athletic games. The main object in all these methods is to secure proper relaxation. Some people even go on a periodical drunk in order to achieve the above purpose, perhaps not realizing why they do it.

Contraction is the word we will use for the opposite of relaxation in this chapter, as it will answer our purpose very nicely. It seems that life is a battle between opposites; for instance, we have positives and negatives, light and darkness, pleasure and pain, health and disease, good and evil, joy and sorrow, rich and poor, strong and weak, music and noise, and I might go on indefinitely, but space will not permit. These are only relative terms made by man to express opposites, and from a scientific standpoint differ only slightly.

The emotional center in the brain, when depressed, causes us to weep and when stim-

ulated causes us to laugh, also to become angry or vice versa, good natured and happy through its control over the blood pressure, as I have stated in another chapter.

Certain mental states will cause vaso-constriction (contraction) or vaso-dilation (relaxation) of the circulatory system.

Contraction with retention of the waste products of metabolism and relaxation with elimination of these products you can plainly see may be brought about by proper mental control. The Divine admonition "Know Thyself" has not been followed very closely by the human race, and as a natural sequence very few of us know anything about ourselves—pardon me for saying, not even as much as the lower animals, for a dog exercises more judgment in taking care of his body than the average man.

Oh, man, thou who has created GOD in thine own image, what has come of thy vaunted knowledge? Poor carniverous being, eating slop with the hogs, living by rapine, brigandage, and usurpation of the rights of thy fellow beings, filtering a few measly dollars from the sweat of the more unfortunate fellow beings, that you may indulge yourself in riotous living here on this planet for a few short years, while the unfortunate human being whom you exploit is willing to place some worm of the dust on a pinnacle and worship him, aye, even call him "King" while at his command he goes out to battle and kills his fellow beings in order

that his king may live in luxury. We call ourselves wise—why the bees in the beehive kill their drones and work under a far more harmonious regime than we. When shall you rise from your slumbering lethargy and no longer allow your rights to be prostituted, contented with the thought which has been impressed upon you by your canny superiors that you shall save your soul in the future existence. Never mind your soul. No soul shall be lost that is worth saving.

So far I can see no excuse for saving the human race, as they have proven themselves unfit to live here on this planet, to say nothing of the hereafter. At the present moment over in Europe twenty million human beings are waging war and trying to kill each other and for what? In the shadow of the Tomb of the greatest personage that ever lived on earth; He, who preached the gospel of "Peace on Earth and Good Will Toward Men" may be heard the combined tread of the martialled hosts of Europe. Their martial music is the wail and cry of orphans and widows and the conflagration of great cities.

While attempting to teach mental science under such circumstances is like a voice crying out in the wilderness. I firmly believe that out of this great strife shall come broader freedom and larger liberties for the common people.

Human progress is only made by one of the two methods, Evolution or Revolution, and as

we have not developed high enough mentally to progress by evolution, the natural method, we must progress by revolution.

The main trouble with the human race so far has been that we crucify our redeemers and persecute our reformers.

When we learn to "live and let live" we shall have no further need for dope or doctors, I care not what their cult may be.

Sympathy under this false system in which we live is craved by every human heart.

The average business man in this commercial age is so taken up with his business that he has no time for home and family, and while he may give his wife everything in worldly goods that her heart desires, it is breaking for just a little bit of sympathy, while the other man's wife whom he euchers out of these goods to give them to his wife is dying from neglect, consequently he has created dis-ease in both families. This craving for sympathy causes depression or constriction, and this is followed by indigestion with probably gas distention in the lower bowels—the family physician is called in. Thence follows a case of misplaced sympathy; he looks grave and the patient becomes apprehensive, and between the two they soon work up a case of fatal obstruction, or appendicitis, or whatever they have a mind to call it. The patient is rushed to the hospital and operated on before the gas has time to pass off, because the patient might lose her fear and

decide not to be operated on when relieved of the gas pain.

A desire for sympathy causes people to tell their friends of their great suffering. Their friends all have a good doctor or a good cure to suggest for their troubles. It does not take long until they have the patient suffering from a psychopathic trouble, or from fear, which causes constriction with a concentration of nervous energy on the affected part, which in time will produce a pathologic condition if one does not already exist.

There are many honest physicians who do not have much time to condole and sympathize with these patients and their services are not appreciated. They regulate the patient's diet, usually find they are making garbage cans out of their stomachs, and give them a compound cathartic pill to relieve their condition.

Rational people will appreciate this sort of treatment, but there are many who will send for another doctor as soon as the first one is out of sight, one who can spread the salve, and who will magnify their ailment. They want sympathy, and are going to have it regardless of what it costs in money or bodily mutilation.

I am pleased to note that we are getting more and more people in the world who are beginning to think for themselves, and who will allow no doctor, priest, or lawyer to do their thinking for them, not even the old lady gossips in the community, who have a nose as

long as the bill on a crow and who keep sticking it into everybody's business.

When some one says, you look sick, you are working too hard, you should rest more; these suggestions have no influence over them for sound sense and good judgment declare, "I know how I feel, no one can feel my emotions or do my thinking for me—why should my actions be guided by others, who know nothing about me?"

It is only those who do not know themselves who need doctors for their bodies, preachers for their souls, and policemen and lawyers to help them fight their enemies. The world is full of people who have failed because of some minor detail, they have learned all the elements of salesmanship, except affability, and fail on this account. Many a doctor who is much more proficient from a scientific standpoint than his competitor fails because he lacks salesmanship. Patients come to them depressed in spirits, they feel sorry for themselves, and if the doctor does not magnify their ills and sympathize with them, they will seek one who does. Sympathy and sweet words have won many a woman to the operating table.

Many women have false ideas of life. Their husbands have failed to meet their expectations —they are longing to be understood, they are suffering from emotional insanity, perhaps mania transutoria. They are like an unmanned bark upon an unknown sea, whose shoals are false ideas, the waves of impulse and emotions

are sure to shipwreck them, and the medical sharks will surely get them.

Emotion and reason are opposites and cannot exist in the same mind at the same time. Emotional people are sure to get caught in the medical, legal, and ethical traps baited by charlatans who assume to hold the keys to all correct knowledge which they keep protected by law.

Most systems of healing of the present day are palliative. We treat effects instead of causes. No doubt palliative measures may be brought about mentally as well as with drugs. There are only about two things we can do with the organism, and these are inhibition and stimulation. You can place all the drugs in the Materia Medica under these two heads. The drugless healers get their results also by one of these two effect on the body, whichever is indicated.

You can inhibit and stimulate mentally or by physical methods such as Osteopathy.

There is good in all systems of healing, and the wise physicians will use all methods to get results. The trouble with so many practitioners is that they know only one method, and they are bigoted enough to think they can cure all diseases by that one method.

Surgery is an absolute science, but many surgeons have surgical insanity and think they can cut out all disease, and I have known Christian Science healers to treat a cancer case until metastasis had set in, carrying the disease

by the blood to all parts of the body when a surgical operation in the beginning would have cured the case.

Fear is another mental disease which is abroad in the land. The coward fancies dangers which do not exist, and dies a thousand deaths. Fear is the first and last enemy of the soul. Every mother should impress upon her child the lesson of courage.

Scaffolds, jails and prison colonies have produced more criminals than they have ever healed. It is fear that makes criminals, and every criminal is a moral coward.

No brain cramped with fear could ever see the truth. No soul except the soul unafraid, could ever be genuinely good. No religion of any value to ennoble life can be based upon anything but pure bravery. Lord, give us more brave men. Men who will dare to tell and live the truth; Men who will not lie, Men who will meet destiny, their fellow-men and the unknown with utter fearlessness.

While we have absolute proof that microbes have existed upon the earth for thousands of years, and while it is only since the perfection of the microscope a few years past, that we have known anything about them, and while it is also a fact that people lived longer before they knew anything about them than they do now, it looks to me like the fear of the microbe kills more people than the microbes themselves.

For some reason or other the babies of the ghetto districts seem to be stronger and live longer and resist disease better than the sterilized food babies of the silk stocking districts.

The fact of the matter is that germs only effect people whose vitality is below the normal standard. If germs could hurt healthy people, the human race would be annihilated in thirty days.

Fear lowers the vitality. The results obtained by Christian Science in many cases is their utter disregard for disease, removing the constriction of fear where the disease was a mental disease.

However, after a disease has progressed far enough to be a physical disease, only physical methods will cure same. Real disease is physical and pertains only to the physical body, Sin also is physical. The idea of sinning against the Creator of a million worlds like this is preposterous. We can sin only against our own physical body or some other physical body. The body is a house of clay designed to be only a temporary abode for the spirit, while it is undergoing preparation and receiving impression for a future existence.

Be not afraid. The Divine intelligence that marks the sparrow's fall will take care of you, perhaps the master-piece of his creative genius.

If it takes the fear of Hell-fire to keep you from sinning, you are a moral sinner already.

The Divine admonition "Thou shalt not kill,

steal, and worship false Gods" was not meant for me.

I have no desire nor inclination to kill nor steal, and the Creator of a million worlds like this, who saw fit to place me here at this particular time, is a fit subject for my adoration, and I am willing to sit at His feet through countless ages and learn lessons of beauty, holiness and truth and so far as I am concerned, He can cut out the psalm singing for the sweet harmony of His words of wisdom and truth will be music enough for me.

Complimentary Closing

To thine own self be true; and it must follow as the night the day. Thou can'st not then be false to any man.
—Shakespeare.

In closing this little volume I must say I have followed the evolution of my own mind as it has led me into the deep recesses of science. I could do nothing else and be true to myself. If I am not true to myself I cannot be true to the God of Nature and the creations of his evolving and immutable laws.

I may have made mistakes, but in my scientific research work I have followed as near as I knew how the natural laws, and when we keep close to the great heart of nature, we seldom go wrong.

This little work may seem revolutionary from a medical standpoint, but we are living in a revolutionary age.

The old ideas, laws, customs, creeds, and worn-out theories are being shot to pieces.

How glorious it is to live at this particular time in the World's history.

Nature's God has been suffering from auto-intoxication due to an accumulation of the waste products of superstition, ignorance, and gluttony. Spontaneous combustion has taken place in the form of a world war, which will purge her of a lot of these unnecessary evils.

When a mind evolves wrong, nature destroys the body that supports it.

We have been accustomed to think that Europe was the seat of all learning and knowledge. It mattered little whether it be turtle soup or bug juice, if it came from Europe, the people of the good old U. S. A. would bare their biceps and let you pump away.

The fact of the matter is, we have more scientists to the square inch in this starry spangled land of Liberty than they have in Europe, to the square mile.

The Golden Calf has been our scape goat and on its back we will place our kings, superstition, false ideas, and booze—tie a can to its tail and chase it over the great divide.

Our Kershina light shall be the smoke and fire of battle which shall lead us out of the wilderness of ignorance, false psychology, and dogmas into the bright light of a new day when every man shall learn to exercise his God given powers and think for himself, instead of allowing some petty-fogging lawyer, doctor, priest, or king do his thinking for him.

We cannot violate the laws of nature and live. If we do not heed her bidding she will send us back to the mill of the gods and grind us over. Next time she may get more mind out of our ashes.

We never get sick unless we violate some natural law, such as overeating or working, using narcotics, stimulants, such as coffee, tea, tobacco, etc.,

If we do not obey the physical laws of nature, we must die a physical death. Man is a product of the evolution of all the animal life in all ages and in his make up we find the queer heredity and characteristics of some of these animal natures. He may have the cunning of the fox, the greediness of the pig, the friendship of the dog, the timidity of the sheep, or the ferocity of the lion, but the mark of true manhood is to control these animal passions. When you start out on life's highway it is your duty to select the animal quality to make your journey a success. Do not scoff, but keep your mental eyes open and be willing to learn. When you cannot learn anything more even from a monkey, you have outlived your period of usefulness.

Study nature and meditate on her wonderful creations and laws.

Remember that the falling of a leaf with the destruction of the microscopic life on its surface may be just as great a catastrophe to its inhabitants as the destruction of a world like ours would be to us.

Science has never yet seen the chemical atom, and Sir William Crookes tells us there are several finenesses of ether.

Remember you are only a vibrating molecule in a universe of matter.

There are many men who imagine they guide the destinies of people and nations. Their laws are foolishness and medicines poison.

In reality they are but scum froth gliding down the dark stream of decadence.

If I have succeeded in making you think for yourself instead of following the old lines of stereotyped thought handed down to you in college; I have not labored in vain.

Colleges never have and never can be anything else but dispensers of second-hand knowledge.

Respectfully,

THE AUTHOR.